

TWENTIETH
ANNUAL REPORT
ON THE
CONDITION OF THE COMBINED
SANITARY DISTRICT
OF
WEST SUSSEX,

FOR THE YEAR 1893,

BY

CHARLES KELLY, M.D., F.R.C.P.

MEDICAL OFFICER OF HEALTH,

PROFESSOR OF HYGIENE IN KING'S COLLEGE, LONDON.



Brighton :

THE SOUTHERN PUBLISHING CO., LTD., 130, NORTH STREET.

1894.



Digitized by the Internet Archive
in 2018 with funding from
Wellcome Library

<https://archive.org/details/b30264388>

INDEX

STEYNING DISTRICT ...	1-16	Thakeham (continued.	
Population ...	1	Inquests ...	60
Births and birth-rate ...	3	Miscellaneous ...	60
General mortality...	3	Statistical tables ..	61-68
Infant mortality ...	5		
Zymotic mortality ...	5	EAST PRESTON DISTRICT ...	69-86
Hangleton Hospital ...	6	Population ...	62
Water supply ..	7	Births and birth-rate ...	72
Drainage and sewage ...	7	General mortality...	72
Scavenging and cleansing	7	Infant mortality ...	74
Cowsheds and dairies ...	8	Zymotic mortality...	74
Miscellaneous ...	8	Small-pox ..	75
Inquests ...	8	Systematic inspection ...	78
Statistical tables ...	9-16	Miscellaneous ...	78
		Inquests ...	79
		Statistical tables ...	80-86
HORSHAM DISTRICT (Rural)	17-34		
Population ...	17	MIDHURST DISTRICT...	87-104
Births and birth-rate ...	19	Population ...	87
General mortality ...	19	Births and birth-rate ...	90
Infant mortality ...	20	General mortality...	90
Zymotic mortality ...	21	Infant mortality ...	91
Small-pox ...	21	Zymotic mortality ...	92
Systematic inspection ...	22	Age and sex distribution...	93
Ifield and Crawley drainage	26	Water supply ...	94
Pollution of the River Arun	23	Drainage and sewage ..	94
Inquests ...	27	Systematic inspection ...	95
Statistical tables ...	28-34	Miscellaneous ...	95
		Inquests ...	96
		Statistical tables ...	97-104
PETWORTH DISTRICT ...	35-48		
Population ...	35	WESTBOURNE DISTRICT ..	105-120
Births and birth-rate ...	37	Population ...	105
General mortality ..	37	Births and birth-rate ...	107
Infant mortality ..	38	General mortality...	107
Zymotic mortality ...	39	Infant mortality ...	108
Age and sex distribution...	40	Zymotic mortality ...	109
Systematic inspection ..	40	Drainage and sewage ...	110
Miscellaneous ...	40	Water supply ...	110
Rainfall ...	41	Systematic inspection ...	111
Inquests ..	41	Miscellaneous ...	112
Statistical tables ...	42-48	Inquests ...	113
		Statistical tables ...	114-120
THAKEHAM DISTRICT ...	49-68		
Population ...	49	WORTHING DISTRICT ...	121-138
Births and birth-rate ...	51	Population ...	121
General mortality...	52	Births and birth-rate ...	123
Infant mortality ...	53	General mortality...	123
Zymotic mortality ...	53	Infant mortality ...	125
Enteric Fever ...	54	Zymotic mortality ...	126
Age and sex distribution	55	Age and sex distribution...	127
Systematic inspection ...	56	Systematic inspection ..	127
Amberley ...	56		
Findon ...	58		
Scavenging and cleansing	60		

INDEX (continued).

Worthing District (continued).

Inquests	131
Statistical tables	132-138

LITTLEHAMPTON DISTRICT ... 139-152

Population	139
Births and birth-rate ..	139
General mortality	140
Zymotic mortality	141
Death-rates at different periods... ..	
Water supply	142
Sewage and drainage ..	142
Systematic inspection ...	143
Scavenging and cleansing	143
Age and sex distribution	143
Miscellaneous	144
Inquests	144
Statistical tables	145-152

ARUNDEL DISTRICT 153-166

Population	153
Births and birth-rate ...	153
General mortality	154
Infant mortality	154
Zymotic mortality... ..	155
Enteric Fever	156
Age and sex distribution...	158
Water supply	158
Miscellaneous	159
Inquests	159
Statistical tables	160-166

HORSHAM DISTRICT (Urban) 167-180

Population	167
Births and birth-rate ...	167
Deaths and death-rate ...	168
Infant mortality	168
Zymotic mortality	169
Small-pox	170
Water supply	171
Drainage and sewage ...	173
Systematic inspection ...	175
Miscellaneous	175
Inquests	175
Statistical tables	176-180

GENERAL REPORT 181-217

Population	181
Births and birth-rate ...	182
„ (Rural)	184
„ (Urban)	185
General mortality.. ..	185
„ „ (Urban)	187
„ „ (Rural)	187
Influence of season	188
Infant mortality	191
Zymotic mortality	192
„ „ (Urban)	195
„ „ (Rural)	195
Sale of Food & Drugs Acts	199
Meteorology	199

General Report (continued).

Rainfall	202
Hours of bright sunshine...	203
Temperature of the soil ...	208
Accidents	209
Suicides	209

Table 1.—Showing the births and birth-rates in the eighteen years, 1876-93	183
--	-----

Table 2.—Showing the deaths in Urban and Rural Districts	187
---	-----

Table 3.—Showing the deaths in each month in the ten years, 1881-90 and in 1891-93	189
---	-----

Table 4.—Showing the deaths at various groups of ages in the seven Rural Sanitary District in the thirteen years, 1881-93	190
--	-----

Table 5.—Showing the deaths from zymotic diseases in each of the seven Rural Sanitary Districts in the eighteen years, 1876-93	193
---	-----

Table 6.—Showing the deaths from zymotic diseases in the seven Rural Sanitary District in the eighteen years, 1876-93	194
---	-----

Table 7.—Showing the deaths from zymotic diseases in four Urban Sanitary Districts in the eighteen years, 1876-93	196
---	-----

Table 8.—Showing the new cases of infectious disease notified in the three years, 1891-93	197
--	-----

Table 9.—Showing the deaths and death-rate from all causes and from various causes in the eighteen years, 1876-93	198
---	-----

Table 10.—Register of rainfall in 1893	200-201
---	---------

Table 11.—Hours of bright sunshine	204
---	-----

Table 12.—Accumulated heat	205
-----------------------------------	-----

Table 13.—Climate of Worthing	206-207
--------------------------------------	---------

INDEX (continued).

General Report (continued).

Table 14.—S h o w i n g the
deaths from accidents in
each Sanitary District
in the eighteen years,
1876-93 210

Table 15.—S h o w i n g the
deaths and death-rate
from accidents in the
eighteen years, 1876-93 211

Table 16.—S h o w i n g the
deaths from suicide in
each Sanitary District in
the eighteen years,
1876-93 212

Table 17.—S h o w i n g the
deaths and death-rate
from suicide in the
eighteen years, 1876-93 213

General Report (continued).

Table A.—Table of deaths
during the year 1893, in
the combined Sanitary
District of West Sussex,
classified according to
diseases, ages, and
localities 214-15

Table B.—Table of popula-
tion, births, and of new
cases of infectious sick-
ness, coming to the know-
ledge of the Medical
Officer of Health during
the year 1893, in the
combined Sanitary Dis-
trict of West Sussex,
classified according to
diseases, ages, and
localities 216-17

CHART 1.—Bright Sunshine and Rainfall.

CHART 2.—Accumulated Heat.

Report on Enteric Fever in 1893 in the Borough of Worthing and
in Broadwater and West Tarring 218



STEYNING
RURAL SANITARY AUTHORITY.

pp. 1 et seq.

RURAL SANITARY DISTRICT OF STEYNING.

Population in 1841	..	14,353	Population in 1871	..	31,473
„ 1851	..	16,867	„ 1881	..	49,089
„ 1861	..	25,003	„ 1891	..	61,757

The above figures show the population in the whole registration district during the past 50 years ; this district includes Hove, which has rapidly increased since 1851 ; Aldrington, which has developed since the last decade, and New Shoreham with a population now of about 3,400.

The following figures only relate to the rural portion of the district, but in this report Aldrington is included up to 1893 :—

	1861.	1871.	1881	1891.
Area in Statute Acres ..	—	45,678	45,969	44,375
Number of Inhabited Houses .	2,073	2,659	3,080	3,735
„ Uninhabited „ .	70	148	220	284
Population	11,018	14,060	16,325	19,110
Males	5,748	7,254	8,401	9,460
Females	5,270	6,806	7,924	9,650

Up to the last decade the males exceeded the females, as is usual in rural districts in West Sussex ; the change noticed at the last census is entirely due to the rapid growth of Aldrington, which since September 30, 1893, has been joined to Hove. In a short time Aldrington showed the characteristic feature of an urban population by its excessive proportion of females to males. Its rapid growth is here shown during the last three decades :—

			1861.	1871.	1881.	1891.
Inhabited Houses	..	..	2	5	28	382
Uninhabited „	..	..	—	—	—	27
Building	..	..	—	—	12	28
Population	..	..	7	27	155	2,238
Males	..	..	4	12	71	952
Females	..	..	3	15	84	1,286

The following table shows the population in each parish over a long term of years :—

	HOUSES, 1891.			POPULATION.					
	Inhabited.	Un-inhabited.	Building.	Persons, 1861.	Persons, 1871.	Persons, 1881.	Persons, 1891.	Males, 1891.	Females, 1891.
SHOREHAM SUB-DISTRICT:—									
West Preston ..	17	1	—	—	12	96	159	36	123
Patcham ..	200	9	—	638	760	873	1,064	493	571
West Blatchington ..	19	—	—	59	49	59	95	57	38
Hangleton ..	12	—	—	51	61	79	49	25	24
Portslade ..	825	37	2	1,103	2,344	3,708	4,240	2,132	2,108
Aldrington ..	382	27	28	7	27	155	2,238	952	1,286
Southwick ..	528	25	—	1,358	2,339	2,561	2,564	1,282	1,282
Kingston ..	46	3	—	93	245	262	253	134	119
Lancing ..	223	30	—	950	1,069	1,341	1,285	724	561
Old Shoreham ..	52	1	—	282	285	248	260	131	129
Sompting ..	152	5	5	628	726	682	700	359	341
Coomes ..	14	2	—	77	92	71	86	45	41
Botolphs ..	13	4	—	54	81	94	70	37	33
STEYNING SUB-DISTRICT:—									
Bramber ..	37	3	—	119	173	186	169	83	86
Steyning ..	371	35	2	1,620	1,665	1,672	1,705	828	877
Upper Beeding ..	121	14	—	553	580	611	506	260	246
Edburton ..	65	8	—	300	301	341	359	203	156
Poynings ..	59	3	—	261	299	316	305	155	150
Woodmancote ..	64	11	—	331	320	347	314	177	137
Henfield ..	394	53	2	1,662	1,856	1,890	2,006	991	1,015
Ashurst ..	69	7	—	374	388	376	327	183	144
Shermanbury ..	72	6	—	464	388	363	356	173	183

BIRTHS AND BIRTH-RATE.

During the year 1893, the births of 540 children were registered ; of these 274 were male, and 266 were female.

Estimating the population in the middle of the year at 19,630, the birth-rate was equal to 28·5 per 1,000 persons living.

The births and birth-rate in the district during the past ten years have been as follows :—

Year.	Births.	Birth-rate.	Year.	Births.	Birth-rate.
1884 ..	519 ..	29·0	1889 ..	500 ..	26·7
1885 ..	524 ..	28·8	1890 ..	484 ..	25·7
1886 ..	513 ..	28·0	1891 ..	561 ..	29·4
1887 ..	470 ..	25·5	1892 ..	527 ..	27·2
1888 ..	507 ..	27·2	1893 ..	540 ..	28·5

The mean number of births is 514, and the mean birth-rate is 27·6 per 1,000 of population.

In England and Wales the birth-rate during the year was 30·8 per 1,000 persons living, a rate 1·1 per 1,000 below the mean rate in the ten years, 1883—92.

The following table shows the births and birth-rate in each locality during the past three years :—

	Births.				Birth-rate.		
	1891.	1892.	1893.		1891.	1892.	1893.
Portslade Parish ..	157	155	158	..	36·8	36·2	36·0
Aldrington Parish ..	78	64	59	..	35·0	26·1	28·9
Southwick Parish ..	88	81	85	..	34·4	31·6	33·2
Rest of Shoreham S.D.	91	85	99	..	22·8	21·2	24·7
Steyning Parish ..	37	39	42	..	21·7	22·8	24·6
Henfield Parish ..	47	39	32	..	23·4	19·4	15·8
Rest of Steyning S.D...	63	64	65	..	26·9	27·5	28·1
Total	561	527	540	..	29·4	27·2	28·5

GENERAL MORTALITY.

There were 256 deaths registered in this district in the year 1893, but to this number must be added the deaths of 12 persons in New Shoreham Workhouse, and of 2 persons in the Worthing Infirmary, which public institutions are outside the district, leaving the corrected figures at 270.

The 12 Workhouse deaths have been distributed among the several parishes whence each inmate came, viz. :

Aldrington, 2 ; Portslade, 2 ; Southwick, 2 ; Lancing, 2 ; Sompting, 1 ; Steyning, 3 ; in all 12.

Estimating the population in the middle of the year at 19,630, the death-rate was equal to 14·3 per 1,000 persons living.

In country places throughout England and Wales the rate of mortality in 1893 was equal to 17·4 per 1,000 of population.

There is a considerable difference in the death-rate of the two sub-districts, which is chiefly due to age and sex distribution and to occupation. In the smaller agricultural area to the north, the death-rates are the lowest, as the following figures show:—

Shoreham Sub-district:—

		1891.	Deaths. 1892.	1893.		1891.	Death-rate. 1892.	1893.
Portslade Parish	..	73	94	65	..	17·1	22·0	15·0
Aldrington Parish	..	49	34	38	..	22·0	13·9	17·8
Southwick Parish	..	30	50	38	..	11·7	19·5	14·8
Rest of Sub-district	..	64	49	52	..	16·0	12·2	13·0

Steyning Sub-district:—

Steyning Parish	..	27	26	17	..	15·8	15·2	9·9
Henfield Parish	..	26	24	28	..	13·0	11·9	13·9
Rest of Sub-district	..	36	40	32	..	15·4	17·2	13·9
Total	..	305	317	270	..	16·0	16·4	14·3

The variations in the death-rate during the past 10 years have been as follows:—

Year.	Deaths.	Death-rate.	Year.	Deaths.	Death-rate.
1884	.. 263	.. 14·7	1889	.. 213	.. 11·4
1885	.. 260	.. 14·3	1890	.. 281	.. 14·9
1886	.. 291	.. 15·9	1891	.. 305	.. 16·0
1887	.. 252	.. 13·7	1892	.. 317	.. 16·4
1888	.. 242	.. 13·0	1893	.. 270	.. 14·3

The mean number of deaths was 269 and the mean death-rate was 14·5 per 1,000 of population. During the same period there were 5,145 births, so that the natural increase of population by excess of births over deaths was 2,451; the actual increase as shown by the census returns was 2,785, so that several persons must have migrated into this district.

In each parish the deaths were thus distributed:—

West Preston	.. 2	.. Coombes	.. .. 1
Patcham	.. 7	.. Botolphs	.. .. 1
West Blatchington	.. none	.. Bramber	.. .. 6
Hangleton	.. none	.. Steyning	.. .. 17
Portslade	.. 65	.. Upper Beeding	.. .. 10
Aldrington	.. 38	.. Edburton	.. .. 6
Southwick	.. 38	.. Poynings	.. .. 3
Kingston	.. 7	.. Woodmancote	.. .. 2
Lancing	.. 18	.. Henfield	.. .. 28
Old Shoreham	.. 4	.. Ashurst	.. .. 1
Sompting	.. 12	.. Shermanbury	.. .. 4
Total	.. 270.		

INFANT MORTALITY.

The *infant mortality* is here given as measured by the number of deaths under one year of age to the total number of births in the year:—

			Births	Deaths under one year	Ratio to 1000 Births
Portslade Parish	..	..	158	22	139
Aldrington Parish	..	..	59	10	169
Southwick Parish	..	..	85	10	117
Rest of Shoreham Sub-district	..		99	8	81
Steyning Parish	..	..	42	3	71
Henfield Parish	..	..	32	4	125
Rest of Steyning Sub-district	..		65	4	61
Total..			540	61	113

The mean annual rate in the five years 1888—92 was 101 per 1,000 registered births. In England and Wales the proportion of deaths under one year of age to registered births was 159 per 1,000 during the past year, the mean proportion in the preceding ten years having been 144.

ZYMOTIC MORTALITY.

The deaths from zymotic diseases were 20 in the case of those which are notifiable, and 17 in the other class where the number of cases cannot be obtained.

				Cases	Deaths
Fever.	Small-pox	..	..	none	none
	Scarlatina	..	..	121	3
	Diphtheria	..	..	37	7
	Membranous Croup	..	..	5	4
	Typhus	..	..	none	none
	Enteric	..	..	27	6
	Continued	..	..	none	none
	Relapsing	..	..	none	none
	Puerperal	..	..	none	none
	Cholera	..	..	none	none
	Erysipelas	..	..	19	none
Total				209	20

The Notification Act of 1889 came into operation on May 1st, 1891.

In the other class the deaths were as follows:—

Measles	..	..	3
Whooping Cough	..	..	3
Diarrhoea and Dysentery	..	..	10
Rheumatic Fever	..	..	1
Total			17

Adding the two classes together, there is a total of 37 deaths with a zymotic mortality of 1·88 per 1,000.

The prevalence in each quarter of each notifiable disease is shown in the following table:—

	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
Scarlatina	18	40	27	36	121
Diphtheria	12	12	1	12	37
Membranous Croup..	—	3	1	1	5
Enteric Fever	2	4	17	4	27
Erysipelas	4	3	5	7	19
Total..	36	62	51	60	209

SCARLATINA again prevailed all through the year, and especially in Portslade. Nearly all the cases were of a very mild character, and this was the chief cause of the prevalence, as the nature of the disease was in many cases not recognised until too late for isolation. School attendance of children from infected houses was stopped, and the rooms were disinfected and cleansed after the patient had recovered.

The mortality was 1 in 40·3 children attacked, or 2·5 per cent.

DIPHTHERIA was less prevalent, but much more fatal; the mortality was 1 in 5·3 persons attacked, or 19·0 per cent.

ENTERIC FEVER was notified in 27 cases, but of these 10 came from Worthing, and 2 more cases occurred in 2 houses where a case had been sent home.

Most of these attacks were among female servants who were sent from Worthing to their village homes, or among men who worked in that town and drank the polluted water.

The mortality was 1 in 4·5 persons attacked, or 22·2 per cent., and it was still higher in the case of those who were removed home from a distance.

HOVE INFECTIOUS HOSPITAL AT HANGLETON.

An agreement was entered into, in 1892, between the Hove Urban and the Steyning Rural Sanitary Authorities for the admission of infectious cases under conditions laid down in my last Annual Report.

Eight cases of scarlet fever were admitted at a cost of £269 14s. 6d, or a mean cost of £33 14s. each.

At Michaelmas, 1893, the agreement ceased on account of the great expense incurred, and now there is no isolation hospital available for this district.

WATER SUPPLY.

The spring from the foot of the Downs near Shoreham supplies the parishes of Portslade, Southwick, and Kingston. The water is of excellent quality and abundant in quantity, and a vast quantity runs away to waste daily. There are three storage tanks in connection with the works, one of which is at Portslade, and two at Shoreham. Their total capacity is 250,000 gallons, and about 10,000 persons are dependent on this supply and at any time a break down might occur at the works, or in the mains. I consider the storage power should be increased as soon as an opportunity offers, and this will probably be done, as an extension of the area supplied is in contemplation. The area around the spring should also be fenced in, as there is now no protection at all. Too much care cannot be taken in safeguarding such a good supply of water, as the health of the above three parishes depends wholly on this source.

It has been proposed to lay down mains to supply Steyning and Lancing, but nothing has yet been done.

DRAINAGE AND SEWAGE.

Plans for draining Portslade and Southwick were much discussed during the year, and a scheme for this purpose was prepared by Mr. L. Barrett at an estimated cost of £13,000. The plans were adopted and application was made to the Local Government Board to sanction a loan to carry out the work. Nothing, however, had been done up to the end of the year.

SYSTEMATIC INSPECTION.

The following statement gives a summary of the work done by Mr. T. F. Gates, the Sanitary Inspector, during the past year:—

No. of Houses, &c., inspected	..	..	..	560
No. of Nuisances reported	..	..	..	352
No. of Nuisances abated without formal notice	..	..	..	320
No. of Notices served	..	..	..	19
Houses reported unfit for human habitation	..	..	..	2
Houses closed by order	..	..	..	none
Houses cleansed and disinfected	..	..	..	120
Water certificates granted for new houses	..	..	..	6
Wells dug	..	..	..	1
Wells cleansed	..	..	..	10
Cases of overcrowding abated	..	..	..	2
No. of samples of water analysed	..	..	..	6
No. of samples of water found polluted	..	..	..	2
Unwholesome food seized	..	..	..	none
Earth closets provided	..	..	..	11
Privies altered	..	..	..	18

SCAVENGING AND CLEANSING.

The usual contracts were made for removing ashes and house refuse from the houses in Aldrington, Portslade, and Southwick. The work of removal is now done more carefully, but constant supervision is required as there is much neglect and carelessness on the part of the poorer inhabitants.

COWSHEDS AND DAIRIES.

Regulations under the Contagious Diseases (Animals) Act, 1886, and the Dairies, Cowsheds, and Milk-shops Order of 1885 were adopted in the whole of this Rural Sanitary District on April 26th, 1887, and they came into force on June 1st, 1887.

There are 41 registered cowsheds and dairies, and in these there are kept about 858 cows, the number slightly varying from time to time. In a few cases butter only is made, and the skimmed or separated milk is either sold, given away, or used as food for pigs.

The sheds have been frequently inspected, and they have been well kept.

MARGARINE ACT.

There are 45 grocers in the district, but, except in the more populous places, very little Margarine is sold. There seems to be very little demand for it in small villages or hamlets. In places where it is sold the clauses of the Act have been complied with.

BAKEHOUSES.

There are 44 bakehouses in the district, and these have been duly inspected, and kept in a clean condition.

SLAUGHTER HOUSES.

There are 10 slaughter houses in the four largest parishes, and none in the smaller places. These have been often inspected, and they have been kept in a clean condition.

COMMON LODGING HOUSES.

There is no common lodging house in this district.

PROCEEDINGS BEFORE THE MAGISTRATES.

A Worthing resident was summoned on August 28th, by the Steyning Rural Sanitary Authority, for sending his servant, on August 14th, to Steyning, when she was suffering from enteric fever. The girl travelled by rail, and she had to wait at a station for an hour. The defendant was fined 5s. and costs.

INQUESTS.

INQUESTS were held in fourteen cases:—Female, 71 years, heart disease; female, 4 years, accidentally burnt; male, 19 years, fall from cart; male, 38 years, brain disease; male, 44 years, killed on the railway; male, 32 years, cancer; male, 6 hours, asphyxia; male, 36 years, found drowned; male, 42 years, heart disease; male, 48 years, heart disease; male, 2 months, tubercular meningitis; female, 6 months, natural causes; male, 62 years, suicide by hanging; female, 22 years, gastric ulcer.

STEYNING RURAL SANITARY DISTRICT.

TABLE 1.—Showing the Deaths at various groups of ages in the thirteen years, 1881-93.

Year.	At all Ages.	Under 1 Year.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and upwards.
1881-85... ..	1,250	279	157	70	64	343	337
1886-90.. ...	1,279	236	138	62	61	370	412
1891	305	63	34	11	7	89	101
1892	317	69	40	12	13	85	98
1893	270	61	28	16	17	75	73
Total...	3,421	708	397	171	162	962	1,021

STEYNING RURAL SANITARY DISTRICT.

TABLE 2.—Showing the Deaths in each of the eighteen years, 1876-93, from various causes.

Year.		Small-pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Fevers.					Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhoea.	Rheumatic Fever.	Influenza.	Total.
						Typhus.	Enteric.	Continued.	Relapsing.	Puerperal.								
1876-80	...	—	16	9	—	2	10	4	—	7	—	6	12	29	51	—	—	146
1881-85	...	1	29	33	—	3	22	2	—	2	—	5	12	38	42	3	—	192
1886-90	...	—	2	13	—	3	16	—	—	1	—	6	6	29	45	3	7	131
1891	...	—	—	5	1	—	1	—	—	—	—	—	8	8	6	3	10	42
1892	...	—	—	8	—	—	1	—	—	—	—	1	3	21	6	1	23	64
1893	...	—	3	7	4	—	6	—	—	—	—	—	3	3	10	1	7	44
Total...		1	50	75	5	8	56	6	—	10	—	18	44	128	160	11	47	619

(A)—Table of DEATHS during the Year 1893, in the Rural Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.										
	At all ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.		1	2	3
									Small Pox.	Scarlatina.	Diphtheria.
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)			
Portslade Parish	61	22	7	4	5	17	6	Under 5 5 upwards.			1 1
Aldrington Parish.....	36	10	7	—	—	8	11	Under 5 5 upwards.			
Southwick Parish.....	36	10	4	1	—	13	8	Under 5 5 upwards.			1
Rest of Shoreham Sub-district	47	8	5	2	3	12	17	Under 5 5 upwards.			3
Steyning Parish.....	14	3	—	—	2	5	4	Under 5 5 upwards.			
Henfield Parish	28	4	1	5	1	7	10	Under 5 5 upwards.			
Rest of Steyning Sub-district	32	4	2	2	4	10	10	Under 5 5 upwards.		1	1
Hangleton Hospital	2	—	1	1	—	—	—	Under 5 5 upwards.		1 1	
								Under 5 5 upwards.			
								Under 5 5 upwards.			
TOTALS.....	256	61	27	15	15	72	66	Under 5 5 upwards.		1 2	4 3
The subjoined numbers have also to be taken into											
Deaths occurring outside the District among persons belonging thereto.....	14	—	1	1	2	3	7	Under 5 5 upwards.			
Deaths occurring within the District among persons not belonging thereto...								Under 5 5 upwards.			

MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN
UNDER FIVE YEARS OF AGE.

4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Membranous Croup.	FEVERS.					Cholera.	Erysipelus.	Measles.	Whooping Cough.	Diarrhœa and Dysentery.	Rheumatic Fever.	Ague.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease.	Injuries.	All Other Diseases.	TOTAL.
	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.													
2									2	5				2			17	29
1											1		8	2	7		12	32
		1							1	4				4			7	17
													2	2	3		12	19
1										1				2			10	14
													5	3	4		9	22
								2						1			7	13
		3											2	4	5	2	18	34
														1			2	3
		1											2	1	2		5	11
														1			4	5
		1											3	2	3		14	23
								1						1			4	6
													2	4	2	1	15	26
																		1
																		1
3		1						3	3	10				12			51	88
1		5									1		24	18	26	3	85	168

account in judging of the above records of mortality.

[illegible]

(B)—TABLE OF POPULATION, BIRTHS, AND OF NEW CASES

Officer of Health, during the year 1893, in the Rural Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	POPULATION AT ALL AGES.		Registered Births.	Aged under 5 or over 5.	NEW CASES OF SICK- COMING TO THE KNOWLEDGE OF					
	Census 1891.	Esti- mated to mid- dle of 1893.			1	2	3	4	5	6
					Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	FEVERS.	
									Typhus.	Enteric or Typhoid.
(a.)	(b.)	(c.)	(d.)	(e.)						
Portslade Parish	4,236	4,330	158	Under 5 5 upwards.		18 48	4 12	4 		1 5
Aldrington Parish.....	2,286	2,680	59	Under 5 5 upwards.		1 3				1
Southwick Parish.....	2,558	2,580	85	Under 5 5 upwards.		2 10	1 4	1 .....		..... 3
Rest of Shoreham Sub-district	3,977	4,000	99	Under 5 5 upwards.		10 13	2 7			 9
Steyning Parish.....	1,705	1,710	42	Under 5 5 upwards.		 2				 6
Henfield Parish	2,006	2,020	32	Under 5 5 upwards.		4 3	1 4			.....
Rest of Steyning Sub-district	2,336	2,320	65	Under 5 5 upwards.		 4	 1			 2
Hangleton Hospital	6	10		Under 5 5 upwards.		.....				.....
				Under 5 5 upwards.		.....				.....
				Under 5 5 upwards.		.....				.....
				Under 5 5 upwards.		.....				.....
TOTALS	19,110	19,650	540	Under 5 5 upwards.		35 83	8 31	5 		2 25

OF INFECTIOUS SICKNESS, coming to the knowledge of the Medical
of STEYNING; classified according to DISEASES, AGES, and LOCALITIES.

[illegible]

(The “H” shows where the Infectious Hospital is.)

H O R S H A M
RURAL SANITARY AUTHORITY.

pp. 17 et seq.

RURAL SANITARY DISTRICT OF HORSHAM.

The population in this registration district was 13,400 at the census of 1841, and 14,018 in 1851; partly owing to changes in the area, it rose to 17,876 in 1861, and to 19,935 in 1871, and then by steady increases to 22,300 in 1881, and to 24,885 in 1891.

The above figures, however, include the urban district of Horsham, which was formed in 1875, and which had a population of 6,874 in 1881, and 8,087 in 1891; Crawley was added in 1880.

The following figures relate only to the present rural sanitary area :

	1861.	1871.	1881.	1891.
Area in Statute Acres ..	—	68,798	69,706	71,277
Number of Inhabited Houses ..	2,375	2,713	3,013	3,410
„ Uninhabited „ ..	56	135	177	232
Population	13,022	13,710	15,426	16,798
Males	6,872	7,097	7,915	8,585
Females	6,150	6,613	7,511	8,213

The following table shows the population in each parish over a long term of years :—

	HOUSES, 1891.				POPULATION.						
	Inhabited.	Un- inhabited.	Building.	Persons, 1861.	Persons, 1871.	Persons, 1881.	Persons, 1891.	Males, 1891.	Females, 1891.		
SOUTH SUB-DISTRICT:—											
West Grinstead ..	286	24	—	1,403	1,344	1,476	1,582	906	676		
Shipley ..	205	21	3	1,212	1,147	1,114	1,061	567	494		
Nuthurst..	173	9	3	767	711	811	853	449	404		
Horsham (part of)	118	2	—	793	755	682	555	295	260		
NORTH SUB-DISTRICT:—											
Horsham (part of)	462	33	2	1,100 ¹	1,443	1,996	2,421	1,269	1,152		
Lower Beeding ..	270	10	—	1,149	1,246	1,309	1,284	641	643		
Crawley ..	85	10	—	473 ²	505 ²	451	437	221	216		
Ifield ..	600	34	—	1,307	1,639	2,043	2,817	1,361	1,456		
Rusper ..	117	8	—	590	599	539	548	285	263		
Warnham ..	225	11	3	1,006	1,007	1,065	1,060	546	514		
WEST SUB-DISTRICT:—											
Slinfold ..	178	7	3	755	796	773	853	412	441		
Itchingfield ..	94	14	—	377	377	434	492	241	251		
Rusper ..	234	10	—	1,068	1,069	1,122	1,177	609	568		
Warnham ..	363	39	—	1,495	1,577	1,611	1,658	783	875		

1. Estimated, 2. Crawley was not in this district until 1880; it is included here for the purpose of comparison.

BIRTHS AND BIRTH-RATE.

The births and birth-rate during the past ten years have been as follows:—

Year.	Births.	Birth-rate.	Year.	Births.	Birth-rate.
1884 ..	546 ..	34·7	1889 ..	418 ..	26·0
1885 ..	429 ..	27·1	1890 ..	420 ..	26·0
1886 ..	496 ..	31·2	1891 ..	467 ..	27·8
1887 ..	452 ..	28·3	1892 ..	399 ..	23·6
1888 ..	454 ..	28·3	1893 ..	394 ..	23·1

The mean number of births is 447, and the mean birth-rate is 27·6 per 1,000 of population.

In England and Wales the birth-rate during the year was 30·8 per 1,000 persons living, a rate 1·1 per 1,000 below the mean rate in the ten years, 1883—92.

The following table shows the births and birth-rate in each locality during the past three years:—

		Births.				Birth-rate.		
		1891.	1892.	1893.		1891.	1892.	1893.
South Sub-district	..	107	89	86	..	26·4	22·0	21·3
Ifield Parish	..	83	86	65	..	29·2	29·4	21·6
Rest of North Sub-district	..	152	126	150	..	26·4	22·0	25·8
West Sub-district	..	125	98	93	..	29·9	23·3	22·1
Total ..	..	467	399	394	..	27·8	23·6	23·1

GENERAL MORTALITY.

There were 241 deaths registered in this district during the year 1893, but from this number must be deducted the deaths of 6 persons in Horsham workhouse, who came from the Horsham Urban Sanitary District; the remaining 24 workhouse deaths were distributed among the several parishes whence each inmate came, viz., Shipley 1, Horsham 11, Ifield 4, Slinfold 1, Rudgwick 2, Warnham 3, Billingshurst 2, in all 24.

Estimating the population in the middle of the year at 17,050, the death-rate was equal to 13·8 per 1,000 persons living.

The variations in the death-rate during the past 10 years have been as follows:—

Year.	Deaths.	Death-rate.	Year.	Deaths.	Death-rate.
1884 ..	217 ..	13·8	1889 ..	213 ..	13·2
1885 ..	228 ..	14·4	1890 ..	210 ..	12·9
1886 ..	291 ..	18·3	1891 ..	240 ..	14·7
1887 ..	209 ..	13·1	1892 ..	289 ..	17·7
1888 ..	219 ..	13·6	1893 ..	235 ..	13·8

Thus the mean annual number of deaths is 235, and the mean annual death-rate is 14·5 per 1,000 of the population. During the

same period there were 4,475 births, so that the natural increase of population by excess of births over deaths was 2,124. The actual increase as shown by the census of 1891 was 1,372, so that a large number of persons must have left the district during the past decade.

In country places throughout England and Wales the mortality in 1893 was equal to 17·4 per 1,000 of population.

In each locality the deaths and death-rate are here shown for the past three years :—

		Deaths.				Death-rate.		
		1891.	1892.	1893.		1891.	1892.	1893.
South Sub-district	..	72	65	45	..	15·3	16·0	11·1
Ifield Parish	..	33	40	45	..	11·6	13·7	15·0
Rest of north Sub-district	..	80	106	82	..	13·9	18·5	14·1
West Sub-district	..	55	78	63	..	13·1	18·6	14·9
Total		240	289	235	..	14·3	17·1	13·8

As the occupation and the age distribution of the population are very similar in each sub-district, the death-rate does not show much variation.

In each parish the deaths were thus distributed :—

West Grinstead	..	21	..	Ifield	..	..	45
Shipley	..	16	..	Rusper	..	..	4
Nuthurst	..	5	..	Warnham	..	..	14
Horsham (south)	..	3	..	Slinfold	..	..	14
Horsham (north)	..	46	..	Itchingfield	..	..	12
Lower Beeding	..	12	..	Rudgwick	..	..	15
Crawley	..	6	..	Billingshurst	..	..	32
Total		..	235.				

. INFANT MORTALITY.

The *infant mortality* is here given as measured by the number of deaths under one year of age to the total number of births in the year :—

				Deaths under one year.	Ratio to 1000 Births.
South Sub-district	..	..	86	9	104
Ifield Parish	..	..	65	3	46
Rest of North Sub-district	..	..	150	15	100
West Sub-district	..	..	93	10	107
Total..		..	394	37	94

The mean annual rate in the five previous years 1888-92 was 95 per 1,000 registered births.

In England and Wales the proportion of deaths under one year of age to registered births was 159 per 1,000 during the past year, the mean proportion in the preceding ten years having been 144.

ZYMOTIC MORTALITY.

The deaths from zymotic diseases were 13 in number in the case of those which are notifiable, and 6 in the other class where the number of cases cannot be obtained.

				Cases.	Deaths.
	Small-pox	..	..	12	5
	Scarlatina	..	..	59	1
	Diphtheria	..	..	15	6
	Membranous Croup	..	..	none	none
Fever.	Typhus	..	..	none	none
	Enteric	..	..	11	1
	Continued	..	..	none	none
	Relapsing	..	..	none	none
	Puerperal	..	..	none	none
	Cholera	..	..	none	none
	Erysipelas	..	..	6	none
	Total	..	..	103	13

In the other class the deaths were as follows :—

Measles	..	..	..	..	none
Whooping Cough			..	..	3
Diarrhoea and Dy sentery				..	3
Rheumatic Fever			..	..	none
					<hr/>
			Total	..	6

Adding the two classes together, there is a total of 19 deaths with a zymotic mortality of 1.1 per 1,000.

The prevalence in each quarter of each notifiable disease is shown in the following table :—

	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
Small-pox	1	11	—	—	12
Scarlatina	2	7	16	34	59
Diphtheria	3	2	9	1	15
Enteric Fever	2	2	7	—	11
Erysipelas	1	2	1	2	6
Total	9	24	33	37	103

SMALL-POX.—A case of small-pox appeared in Horsham Union Workhouse.

The patient, John G., 63 years of age, was engaged as a wardsman, and had been an inmate for some years. He was taken poorly on January 17th and a few spots appeared on January 21st. He was sent to an Isolation Ward on the 24th. He had been vaccinated about 40 years ago. A man who had had small-pox was engaged at first to nurse him, but on January 30th a trained nurse came down about mid-day and thenceforward took charge of the case. All the officers were at once re-vaccinated, and any other inmates who had been near the case.

Isolation and re-vaccination were carried out well, and all the tramp-wards were disinfected and thoroughly washed.

The man had a sharp attack but progressed favourably. There was no history of infection, nor had any tramp been known to be similarly affected, the man had not been away from the house for some weeks. The nurse who came down from London had never been vaccinated, and, in fact, was opposed to it. The medical man insisted upon vaccination being performed, and this was done on February 8th. On February 11th some spots appeared and she was then suffering from small-pox. She was isolated in an adjacent ward to the first case.

Another nurse was obtained to look after these patients. She was successfully vaccinated seven years ago.

The only other case in the whole of the combined district was that of a woman in the Urban District of Horsham, at a house a mile distant from the Union House. A few cases were heard of in some neighbouring Workhouses in Surrey, but no connection could be traced between these cases, nor with the one in the town of Horsham.

On March 19th another man was admitted into the Infirmary with small-pox, and in the month of April sixteen more cases were suffering from the same disease.

All the cases were of adult age, and all had been vaccinated in childhood.

Although the Notification Act was in force, no information could be obtained as to the number of cases, nor as to the history of the outbreak.

Information of the outbreak was given to the Local Government Board.

SCARLET FEVER prevailed in a mild form in the latter half of the year, but there was only one death.

SYSTEMATIC INSPECTION.

No. of Houses, &c., inspected	..	..	..	1,354
No. of Nuisances reported..	..	..	..	386
No. of Nuisances abated without notice	..	..	..	220
No. of Nuisances abated with notice	..	..	..	156
No. of Nuisances now in course of abatement	..	..	..	10
Houses reported as unfit for habitation	..	..	..	3
Houses cleansed and disinfected	..	..	..	45
Houses cleansed and lime washed..	..	..	..	79
Water certificates granted for new houses	..	..	..	28
New Wells dug	..	..	..	44
Wells cleaned out	..	..	..	54
Wells deepened	..	..	..	61
Wells closed	..	..	..	3
Water laid on from Horsham Waterworks	..	..	..	7
No. of samples of water analysed	..	..	..	19

No. of samples of water found polluted	5
Cases of overcrowding reported	9
Cases of overcrowding abated	9
Unwholesome food seized	none
Legal proceedings	1
New closets erected	12
Old closets converted into earth closets	4
Old closets provided with proper cesspits	6
No. of Gully traps put in to replace old Bell traps	79
Houses connected with Ifield and Crawley main sewer	5
Number of registered cowsheds and dairies ..	55
Number of cows	687
Number of visits made to same	139
Number of slaughter houses	19
(These have been frequently visited).	
Number of bakehouses	38
(Frequent visits have been made to each one).	

NEW HOUSES.

Pair of Cottages, Ifield. Well, 30ft. deep, 26ft. of water.

House, Shipley. Well, 64ft. deep, 9ft. of water, and rain water tank 10,000 gallons.

Two Pairs of Cottages, Crawley Road, Horsham. Supplied from Horsham Waterworks.

Cottage, Partridge Green. Well, 12ft. deep, full of water.

Villa, Warnham. Well, 29ft. deep, 18ft. of water.

House, Slinfold. Well, 22ft. deep, 11ft. of water.

Cottage, Colgate. Well, 23ft. deep, 4ft. of water.

House, Ifield. Well, 21ft. deep, 9ft. of water.

Pair of Cottages, Lower Beeding. Well, 14ft. deep, 6ft. of water.

Pair of Cottages, Crawley Road, Horsham. Well, 17ft. deep, 4ft. of water.

Pair of Cottages, Partridge Green. Well, 28ft. deep, 8ft. of water.

Pair of Cottages, West Grinstead. Well, 23ft. deep, 8½ft. of water.

Pair of Villas, Rusper Road, Horsham. Supplied from Horsham Waterworks.

Cottage, Colgate. Well, 19ft. deep, 6ft. of water.

Pair of Cottages, Broadbridge Heath. Well, 27ft. deep, 6ft. of water.

Cottage, Rusper. Well, 24ft. deep, 10ft. of water.

Pair of Cottages, Crawley Road, Horsham. Supplied from Horsham Waterworks.

POLLUTION OF THE RIVER ARUN.

On June 23rd, 1893, I visited Broadbridge Mill to enquire into a nuisance arising from the impure state of the river Arun at that spot.

There was a very great nuisance, and the stream and pond around Mr. Stanford's house was in a most foul condition from the presence of decomposing sewage; the water was black, and it gave off a most offensive odour. The smell was worse when the mill was working. Dead fish, in many places, were floating on the surface of the water.

The nuisance was, I think, greater than in September, 1880, and in July, 1881, when a similar condition of the stream was reported to you.

The nuisance arises from the sewage from the Horsham sewage farm passing at times into the river Arun above Floodgates, which is the point whence a small stream has been diverted from the main river so as to supply Broadbridge Mill, and then it returns to the river at a lower point.

I took two samples for analysis :—1, from Black Bridge, a point on the river above the sewage farm; 2, from the stream just above Mr. Stanford's pond. The result shews a very great amount of pollution in the second sample.

On visiting the sewage farm, I found one filter bed in use and the effluent was very good, but for five hours on that day some untreated sewage was flowing down the open drain, which runs to the old ponds which have been drained for some months; this sewage, however, did not reach the river. The stream above the works is small and sluggish, but not offensive; below the works it is discoloured, and it is very dark for 300 to 400 yards above Floodgates, where the water is kept back so as to supply the mill. On opening one of the lock-gates a large quantity of black mud flowed from the bed of the river showing a large amount of deposit in the main stream.

The condition of things has been aggravated (1), by the very dry weather since March 1st so that there has been no flood of water to flush the stream. (2), by the stagnant state of the water in the branch and in the pond when the mill is not working, whereby there is much deposit of mud. (3), by the extremely hot weather during the last two months, which causes any sewage, especially when stagnant, to putrify and decompose. A few weeks ago the filtering tanks at the sewage works were out of order, and some unfiltered sewage must have passed into the river. Even now it is quite possible to send sewage which has only passed through the settling tanks direct into the stream without going first through the filter beds.

The sewage, if always properly treated, would probably cause no nuisance, and Mr. Stanford's complaint would be avoided if the effluent passed into the river below Floodgates. If not so treated, it would cause a nuisance below and there would be an infringement of the Rivers Pollution Act, 1876. At the present time no one can live with safety at Broadbridge Mill or at Floodgates.

The two samples were analysed by Prof. Thomson and Mr. Jackson, of King's College, with the following result:—

No. 1. The water was slightly turbid but free from any disagreeable odour.

On analysis this sample gave the following numbers :—

Total solid residue	10·5 grains per gallon
Loss on ignition	3·5 " "
Chlorine	2·0 " "
Oxygen consumed from permanganate ..	0·45 " "

Poisonous metals	None
Free ammonia .. .	0·04 parts per million
Albumenoid ammonia .. .	0·04 „ „
Phosphates in this water .. .	Scarcely perceptible trace

The water was alkaline in reaction, but not unusually so. The solid residue darkened on heating, but there was no perceptible odour, and the darkening quickly disappeared.

No. 2. This sample was turbid, and had a disgusting odour. It contained suspended in it, the debris of animal and vegetable life.

On analysis this sample gave the following :—

Total solid residue in filtered sample	25·0 grains per gallon
Loss on ignition	14·5 „ „
Chlorine	3·1 „ „
Phosphates	{ Marked quantity, sufficient to be determined on a larger sample
Oxygen consumed from permanganate	
Free ammonia	1·5 grains per gallon
Free ammonia	1·024 parts per million
Albumenoid ammonia	0·140 „ „
Poisonous metals	None

The reaction of the water was decidedly alkaline, more than four times as alkaline as No. 1.

The solid residue when heated stank abominably, and blackened very fully.

From these numbers it will be seen that this sample is very seriously contaminated.

On September 16th I again inspected the river Arun, as it flows through the urban district to see what sources of pollution could be found.

1. There is an old branch drain which discharges into the river close to an ærated water factory in the Worthing Road. This drain conveys sewage from West Street, and also some drainage from Mr. Mitchell's brewery. The houses connected with this old drain should be cut off, and this source of pollution should be stopped. The river below this outfall was very foul, and as there was but little water in the river the nuisance was considerable, and there was much dirty dark deposit on the banks and upon objects in the stream.

2. There was an old drain coming from the direction of the Causeway, discharging sewage into the backwater below the cascade.

3. There was an old drain coming from the direction of Normandy and discharging sewage into the backwater, close to the above drain No. 2. There was no water flowing over the cascade and so the sewage in these two cases lay in stagnant pools in the bed of the river. When wet weather prevails, this sewage will be washed into the river below the mill, but it does not now reach the stream.

4. There is a tan-yard in the Brighton Road which discharges some waste products from the lime-pits and from the tan-pits into a ditch, which after pursuing a tortuous course, empties into the river at a point below Chesworth.

Nothing has lately passed down this ditch in the lower portion of its course, and a few yards above the outfall there is a dam across the ditch which bays back any liquid above; this dam should be removed so that the flow of water be not impeded.

The ditch above, from the Brighton Road downwards, is in a very foul and offensive condition. It should forthwith be cleansed in the whole of its course, and the liquid refuse from the tan-works should pass into the main sewer.

There is some drainage from a few houses opposite the tan-works which flows into this ditch; this should be stopped, and the ditch should only be used for conveying surface or storm water.

At the time of my visit the only sewage actually flowing directly into the river within the limits of this district was from No. 1 drain, but it is clear that during wet weather there will be some pollution caused from all the above sources.

IFIELD AND CRAWLEY SEWAGE FARM.

Mr. Moses Brooks submitted the following report:—

I am pleased to state that during the year ending March 25th, 1893, I have received no complaint whatever as to the condition of the effluent water on leaving the Sewage Farm.

The rye grass that was grown upon the old filter bed has been sold, and realized during the year the sum of £5 10s., there is now another good crop ready, and it is proposed to offer this for sale by tender.

The chief work during the year has been the construction of the permanent banks around and across the lower portion of the Farm, by this means the land has been divided, so that I can flood one part while the other part is drying. The cost of constructing these banks was £18 10s., and I propose this year to have one piece prepared and sown with rye grass.

By constant care and attention, by frequently cleaning out the seven large pits, and then passing the effluent over the land I have been able to keep the effluent from becoming a nuisance, and to insure that this is properly attended to I have made 79 visits to the farm during the year.

The sludge, that was taken out of the pits, has been offered to the resident farmers free of cost, for them to try. Some was used on meadows and some upon a field for cabbage, and in each case there was a marked improvement in the crops. I propose this year to offer the sludge for sale.

The following is a summary of the receipts and expenditure on the farm during the year :—

RECEIPTS.				EXPENDITURE.			
	£	s.	d.		£	s.	d.
By Sale of grass as				To Cost of construct-			
per tender ..	4	10	0	ing banks ..	18	2	0
„ Ditto ..	0	10	0	„ Labour for the			
„ Ditto ..	0	10	0	year ..	52	5	3
Excess of expenditure				„ Tools, netting, &c.	0	11	10
over receipts ..	65	9	1				
	<u>£70 19 1</u>				<u>£70 19 1</u>		

INQUESTS were held in fifteen cases :—Male, 26 years, suicide by drowning ; female, 53 years, suicide by drowning ; female, 18 years, collapse after confinement ; female, 17 years, heart disease ; female, 40 years, phthisis, aggravated by exposure ; male, 43 years, accidentally knocked down by a wagon ; male, 32 years, suicide by drowning ; female, 12 hours, prematurely born ; female, two weeks, accidentally suffocated, overlaid by mother ; male, 44 years, run over by a goods train ; female, 42 years, cancer ; male, 9 months, natural causes ; male, 47 years, found drowned ; male, 67 years, found drowned.

There were two deaths returned as “not certified,” male, 10 minutes, prematurely born ; male, 5 months, convulsions.

HORSHAM RURAL SANITARY DISTRICT.

TABLE 1.—Showing the Deaths at various groups of ages in the thirteen years, 1881-93.

Year.	At all Ages.	Under 1 Year.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and upwards.
1881-85... ..	1,042	189	93	57	55	318	330
1886-90.. ...	1,142	223	110	76	60	280	393
1891	240	40	27	10	11	61	91
1892	289	49	25	15	16	80	104
1893	235	37	21	9	10	79	79
Total...	2,948	538	276	167	152	818	997

TABLE 2.—Showing the Deaths in each of the eighteen years, 1876-93, from various causes.

Year.	Small-pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Fevers.					Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhoea.	Rheumatic Fever.	Influenza.	Total.
					Typhus.	Enteric.	Continued.	Relapsing.	Puerperal.								
1876-80 ...	1	9	9	—	—	9	3	—	3	—	—	17	23	19	1	—	94
1881-85 ...	—	4	29	—	1	3	3	—	4	—	6	5	20	16	4	—	95
1886-90 ...	1	9	11	—	1	3	2	—	—	—	2	27	28	21	2	3	110
1891	—	1	3	—	—	2	—	—	1	—	—	3	4	2	—	4	20
1892	—	—	—	—	—	—	—	—	—	—	3	5	5	1	2	18	34
1893	5	1	6	—	—	1	—	—	—	—	—	—	3	3	—	6	25
Total...	7	24	58	—	2	18	8	—	8	—	11	57	83	62	9	31	378

HORSHAM RURAL SANITARY DISTRICT.

TABLE 3.—Showing the Deaths and Death-rate from all causes and from various causes in the eighteen years, 1876-93.

PERIOD.	Deaths during the years 1876-93 from					Annual Death-rate per 100,000 living from					
	Population in middle of period.	All Diseases.	Zymotic Disease.	Phthisis.	Lung Disease.	Heart Disease.	All Diseases.	Zymotic Disease.	Phthisis.	Lung Disease.	Heart Disease.
1876-80	14,700	1,087	94	120	202	81	1,481	127	163	274	110
1881-85	15,750	1,042	95	97	183	79	1,306	120	122	228	98
1886-90	16,450	1,142	107	121	189	104	1,368	129	145	226	125
1891	16,820	240	16	18	48	31	1,427	95	107	286	185
1892	16,900	289	16	13	69	25	1,710	94	77	408	148
1893	17,050	235	19	21	31	22	1,378	111	123	182	129

(A)—Table of DEATHS during the Year 1893, in the Rural Sanitary District.

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.										
	At all ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and up-wards.		1	2	3
									Small Pox.	Scarlatina.	Diphtheria.
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)			
South Sub-district.....	44	9	2	1	4	15	13	Under 5 5 upwards.			.....
Ifield Parish	41	3	5	1	3	16	13	Under 5 5 upwards.		1	.....
Rest of North Sub-district ...	68	15	7	4	2	22	18	Under 5 5 upwards.			3 3
West Sub-district	58	10	7	2	1	21	17	Under 5 5 upwards.			.....
Horsham Workhouse	30	1	—	1	—	8	20	Under 5 5 upwards.	1 7		.....
								Under 5 5 upwards.			.....
								Under 5 5 upwards.			.....
								Under 5 5 upwards.			.....
								Under 5 5 upwards.			.....
								Under 5 5 upwards.			.....
TOTALS.....	241	38	21	9	10	82	81	Under 5 5 upwards.	1 7		3 3
The subjoined numbers have also to be taken into											
Deaths occurring outside the District among persons belonging thereto.....								Under 5 5 upwards.			
Deaths occurring within the District among persons not belonging thereto...	6	1	—	—	—	3	2	Under 5 5 upwards.	1 2		

of HORSHAM, classified according to Diseases, Ages, and Localities.

MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN
UNDER FIVE YEARS OF AGE.

4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Membranous Croup.	FEVERS.					Cholera.	Erysipelus.	Measles.	Whooping Cough.	Diarrhœa and Dysentery.	Rheumatic Fever.	Ague.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease.	Injuries.	All Other Diseases.	TOTAL.
	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.													
														1		1	9	11
										1			5		8	4	15	33
														1			7	8
										1			1	4	3	1	22	33
														3			16	22
													9	5	6		23	46
									3					2			12	17
		1											4	10	4	2	20	41
																		1
										1			2	5	1		13	29
									3					7		1	44	59
		1								3			21	24	22	7	93	182

account in judging of the above records of mortality.

[illegible]

(B)—TABLE OF POPULATION, BIRTHS, AND OF NEW CASES

Officer of Health, during the year 1893, in the Rural Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities. (a.)	POPULATION AT ALL AGES.		Registered Births. (d.)	Aged under 5 or over 5. (e.)	NEW CASES OF SICK- COMING TO THE KNOWLEDGE OF						
	Census 1891. (b.)	Esti- mated mid- dle of 1893. (c.)			1	2	3	4	5	6	
					Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	FEVERS. Typhus.	Enteric or Typhoid.	
South Sub-district.....	4,051	4,040	86	Under 5 5 upwards.		2 10					3
Ifield Parish.....	2,817	3,000	65	Under 5 5 upwards.			1				1
Rest of North Sub-district...	5,568	5,600	144	Under 5 5 upwards.		6 17	1 8				5
West Sub-district	4,180	4,210	93	Under 5 5 upwards.		2 21		1			2
Horsham Workhouse.....	182	200	6	Under 5 5 upwards.	12						
				Under 5 5 upwards.							
				Under 5 5 upwards.							
				Under 5 5 upwards.							
				Under 5 5 upwards.							
				Under 5 5 upwards.							
				Under 5 5 upwards.							
				Under 5 5 upwards.							
TOTALS	16,798	17,050	394	Under 5 5 upwards.		10 49	1 13				11

OF INFECTIOUS SICKNESS, coming to the knowledge of the Medical
of HORSHAM; classified according to DISEASES, AGES, and LOCALITIES.

[illegible]

PETWORTH
RURAL SANITARY AUTHORITY.

pp. 35 et seq.

RURAL SANITARY DISTRICT OF PETWORTH.

The population in this registration district was 9,680 at the census of 1841, and 9,629 in 1851; chiefly owing to changes in the area, it rose to 10,065 in 1861, but since 1871 there has been a steady decline.

The following figures relate to the present rural sanitary area which is co extensive with the registration district :

	1861.	1871.	1881.	1891.
Area in Statute Acres ..	—	44,747	45,701	45,738
Number of Inhabited Houses ..	1,970	2,010	1,995	2,000
„ Uninhabited „ .	72	64	120	119
Population	10,065	10,147	9,594	9,431
Males	5,213	5,296	4,857	4,711
Females	4,852	4,851	4,737	4,720

The following table shows the population in each parish over a long term of years :—

	HOUSES, 1891.			POPULATION.					
	Inhabited.	Un- inhabited.	Building.	Persons, 1861.	Persons, 1871.	Persons, 1881.	Persons, 1891.	Males, 1891.	Females, 1891.
NORTH SUB-DISTRICT:—									
Wisborough Green	359	21	1	1,628	1,756	1,687	1,629	827	802
Northchapel	163	21	1	785	802	794	742	381	361
Kirdford ..	346	16	—	1,784	1,796	1,710	1,648	868	780
SOUTH SUB-DISTRICT:—									
Petworth ..	609	41	—	3,368	3,304	2,942	2,867	1,391	1,476
Egdean ..	17	—	—	85	80	76	75	37	38
Fittleworth	159	2	1	683	695	696	761	361	400
Stopham ..	32	1	—	130	145	156	151	74	77
Coates ..	15	—	—	78	94	61	84	40	44
Burton ..	11	—	—	45	67	73	57	29	28
Duncton ..	55	1	—	258	262	268	259	119	140
Barlavington	32	1	—	136	132	182	175	90	85
Sutton ..	63	3	—	364	331	310	325	172	153
Bignor ..	25	1	—	167	150	122	127	63	64
Bury ..	114	11	—	509	533	517	531	259	272

BIRTHS AND BIRTH-RATE.

During the year 1893 the births of 251 children were registered, of these 138 were male, and 113 were female.

Estimating the population in the middle of the year at 9,410, the birth-rate was equal to 26·7 per 1,000 persons living.

The births and birth-rate during the past ten years have been as follows :—

Year.	Births.	Birth-rate.	Year.	Births.	Birth-rate.
1884 ..	304 ..	31·8	1889 ..	263 ..	27·5
1885 ..	246 ..	25·7	1890 ..	223 ..	23·5
1886 ..	284 ..	29·7	1891 ..	251 ..	26·6
1887 ..	264 ..	27·6	1892 ..	214 ..	22·7
1888 ..	240 ..	25·1	1893 ..	251 ..	26·7

The mean number of births is 254, and the mean birth-rate is 26·7 per 1,000 of population.

In England and Wales the birth-rate during the year was 30·8 per 1,000 persons living, a rate 1·1 per 1,000 below the mean rate in the ten years, 1883—92.

The following table shows the births and birth-rate in each locality during the past three years :—

		Births.				Birth-rate.		
		1891.	1892.	1893.		1891.	1892.	1893.
North Sub-district	..	108	95	109	..	26·9	23·7	27·2
Petworth Parish	..	76	68	73	..	26·5	23·7	25·5
Rest of South Sub-district		67	51	69	..	26·3	20·0	27·0
Total ..		251	214	251	..	26·6	22·7	26·7

GENERAL MORTALITY.

There were 129 deaths registered in this district during the year 1893; of these, four took place in Petworth Workhouse, three in Wisborough Green Workhouse, one in the Isolation Hospital, and none in Petworth Cottage Hospital. These deaths have been distributed amongst the several parishes whence each inmate came, viz., Northchapel 1, Kirdford 1, Petworth 2, Fittleworth 2, and Sutton 2, in all 8.

Estimating the population in the middle of the year at 9,410, the death-rate was equal to 13·7 per 1,000 persons living.

The variations in the death-rate during the past 10 years have been as follows :—

Year.	Deaths.	Death-rate.	Year.	Deaths.	Death-rate.
1884 ..	140 ..	14·6	1889 ..	142 ..	14·8
1885 ..	155 ..	16·2	1890 ..	136 ..	14·3
1886 ..	202 ..	21·1	1891 ..	153 ..	16·2
1887 ..	131 ..	13·7	1892 ..	163 ..	17·3
1888 ..	143 ..	14·9	1893 ..	129 ..	13·7

Thus there have been during the above period 1,494 deaths and a mean mortality of 15·7 per 1,000. During the same period there were 2,540 births, so that the natural increase of population by excess of births over deaths was 1,046.

The recent census returns, however, show that there has been a *decrease* of 163, so that a large number of persons must have left this district during the last decade.

In each locality the deaths and death-rate for the past three years are here shown :—

		Deaths.				Death-rate.		
		1891.	1892.	1893.		1891.	1892.	1893.
North Sub-district ..		53	68	52	..	14·4	16·9	13·0
Petworth Parish ..		61	53	38	..	21·3	18·5	13·3
Rest of South Sub-district		34	42	39	..	13·3	16·5	15·3
Total ..		153	163	129	..	16·2	17·3	13·7

In country places throughout England and Wales the mortality in 1893 was equal to 17·4 per 1,000 of population.

In each parish the deaths were thus distributed :—

Wisborough Green ..	20 ..	Coates ..	.. none
Northchapel ..	12 ..	Burton ..	.. none
Kirdford ..	20 ..	Duncton ..	.. 3
Petworth ..	38 ..	Barlavington ..	.. 3
Egdean ..	none ..	Sutton ..	.. 6
Fittleworth ..	10 ..	Bignor ..	.. 1
Stopham ..	3 ..	Bury ..	.. 13
Total ..		129.	

INFANT MORTALITY.

The *infant mortality* is here given as measured by the number of deaths under one year of age to the total number of births in the year :—

			Births.	Deaths under one year.	Ratio to 1,000 Births.
North Sub-district ..	..	..	109	6	55
Petworth Parish ..	..	..	73	4	55
Rest of South Sub-district	..	..	69	7	101
Total ..		..	251	17	68

The mean annual rate in the five previous years 1888-92 was 87 per 1,000 registered births.

In England and Wales the proportion of deaths under one year of age to registered births was 159 per 1,000, the mean proportion in the preceding ten years having been 144.

ZYMOTIC MORTALITY.

There were 5 deaths from zymotic diseases, of which two were among notifiable diseases and 3 in the other class. The rate of mortality was therefore equal to 0·52 per 1,000.

				Cases.	Deaths.
	Small-pox	..	..	4	1
	Scarlatina	..	..	12	none
	Diphtheria	..	..	9	none
	Membranous Croup	..	..	none	none
Fevers.	Typhus	..	..	none	none
	Enteric	..	..	12	1
	Continued	..	..	none	none
	Relapsing	..	..	none	none
	Puerperal	..	..	1	none
	Cholera	..	..	none	none
	Erysipelas	..	..	22	none
	Total	..	..	60	2

The deaths in the other classes were as follows:—

	Deaths.
Measles	none
Whooping Cough	3
Diarrhœa and Dysentery	none
Rheumatic Fever	none
Total	3

The Infectious Disease (Notification) Act, 1889, came into operation in this district on February 2, 1891.

Four cases of small-pox and two cases of scarlet fever were removed to Flathurst Cottage Hospital during the year.

Three of the cases of small-pox were inmates of Petworth Workhouse, and they were all men advanced in life; on removal the disease stopped, but the caretaker of the Isolation Hospital had a mild attack.

The prevalence in each quarter of each notifiable disease is shown in the following table:—

	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
Small-pox	—	4	—	—	4
Scarlatina	1	5	2	4	12
Diphtheria	—	2	4	3	9
Enteric Fever	—	1	9	2	12
Puerperal Fever	—	—	1	—	1
Erysipelas	4	9	4	5	22
Total	5	21	20	14	60

The following table gives a glimpse of social life in an agricultural district in the closing years of the nineteenth century.

	All ages.	Under 15yrs.	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over.
Un-married	{ M. 2,934 F. 2,789	1,606 1,688	474 391	345 272	257 229	112 87	56 58	51 34	33 30
Married	{ M. 1,581 F. 1,569	— —	1 5	35 72	339 355	360 417	371 338	256 245	219 137
Widowed	{ M. 196 F. 362	— —	— —	— —	4 8	8 36	30 60	40 66	114 192
Total 9,431 persons	{ M. 4,711 F. 4,720	1,606 1,688	475 396	380 344	600 592	480 540	457 456	347 345	366 359

SYSTEMATIC INSPECTION.

No. of Houses visited	..	..	..	..	240
No. of Nuisances reported	..	..	..	..	157
No. of Nuisances abated	..	..	..	..	157
No. of Notices served	..	..	..	..	60
Houses cleansed and disinfected	..	..	..	..	30
Houses cleansed and lime washed	..	..	..	..	32
New Closets erected	..	..	..	..	12
Old Closets converted	..	..	..	..	40
Earth Closets made	..	..	..	..	25
Wells sunk	..	..	..	..	10
Wells cleansed	..	..	..	..	15
Samples of water collected for analysis	..	..	..	..	10
No. of infectious cases removed to Isolation Hospital					6
Nature of such infectious illness—small pox 4, and scarlet fever 2.					

MARGARINE ACT.

Very little margarine is sold here by the grocers, and where it can be obtained the regulations of the Act have been complied with. There seems to be no demand for this substance on the part of the scattered agricultural population.

BAKEHOUSES.

These have been often inspected, and they have been well kept. There is no bakehouse on a large scale, and the chief duty is to see that they are frequently cleansed and limewashed. In each case there is a good amount of light and air, and in no case is there any drain within the building.

COWSHEDS AND DAIRIES.

These are in most cases very well kept, care being taken that there is an ample supply of good water, plenty of light and ventilation, frequent removal of refuse and cleansing of the walls and floors.

SLAUGHTER HOUSES.

These are very well-kept as regards cleanliness and removal of refuse. In many instances animals are only killed once or twice a week, so there is no difficulty in keeping them clean and tidy. Each slaughter house is often limewashed, and the blood is generally removed at once for use in a garden.

No proceedings were taken before the Magistrates during the year.

There is one common lodging-house in the district and this has been kept clean.

No cases occurred in which it was necessary to condemn meat or any other article of food.

RAINFALL.

The amount of rainfall during the year was taken daily by the Rev. C. Holland, Petworth Rectory, who has kindly allowed me to use his tables :—

Month.	Total depth in inches.	No. of rainy days.	Rainfall in 1892.
January	2·21	12	1·04
February	3·83	17	1·29
March	0·63	3	1·54
April	0·06	2	1·04
May	0·64	7	1·30
June	2·43	10	2·76
July	3·47	16	2·83
August	0·97	8	3·48
September	2·11	10	3·76
October	4·78	16	5·40
November	3·14	14	4·42
December	4·29	14	2·16
Total	28·56	129	31·02

Inquests were held in eleven cases :—Female, 11 months, want of proper food ; female, 75 years, accidental fall ; female, 46 years, congestion of brain, alcoholism ; male, 75 years, accidental fall ; female, 79 years, heart disease ; male, 8 days, convulsions ; male, 47 years, accidentally drowned ; female, 1 hour, natural causes ; male, 41 years, syncope, accelerated by alcoholism ; male, 11 years, accidentally crushed by a wagon ; male, 39 years, accidentally drowned.

In two cases the cause of death was “not certified :”—Male, 89 years, senile decay ; male, 54 years, apoplexy, kidney disease.

PETWORTH RURAL SANITARY DISTRICT.

TABLE 1.—Showing the Deaths at various groups of ages in the thirteen years, 1881-93.

Year.	At all Ages.	Under 1 Year.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and upwards.
1881-85... ..	749	109	57	34	39	222	288
1886-90.. ...	754	102	47	32	39	226	308
1891	153	30	17	8	7	30	61
1892	163	18	7	6	4	55	73
1893	129	17	6	8	6	48	44
Total...	1,948	276	134	88	95	581	774

TABLE 2.—Showing the Deaths in the eighteen years, 1876-93 from various causes.

Year.	Small-pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Fevers.					Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhoea.	Rheumatic Fever.	Influenza.	Total.
					Typhus.	Enteric.	Continued.	Relapsing.	Puerperal.								
1876-80 ...	1	6	25	—	—	6	—	—	4	—	—	4	8	6	3	—	63
1881-85 ...	—	1	10	—	—	5	—	—	—	—	4	—	7	6	1	—	34
1886-90 ...	—	2	14	—	—	7	—	—	—	—	2	4	8	6	—	—	43
1891 ...	—	—	2	—	—	—	—	—	—	—	—	—	8	—	—	1	11
1892 ...	—	—	4	—	—	—	—	—	—	—	—	—	3	—	—	16	23
1893 ...	1	—	—	—	—	1	—	—	—	—	—	—	3	—	—	3	8
Total...	2	9	55	—	—	19	—	—	4	—	6	8	37	18	4	20	182

PETWORTH RURAL SANITARY DISTRICT.

TABLE 3.—Showing the Deaths and Death-rate from all causes and from various causes in the eighteen years 1876-93.

YEAR	Deaths during the years from						Mean Annual Death-rate per 100,000 living from					
	Population in middle of period.	All Diseases.	Zymotic Disease.	Phthisis.	Lung Disease.	Heart Disease.	All Diseases.	Zymotic Disease.	Phthisis.	Lung Disease.	Heart Disease.	
1876-80	9,800	785	63	76	138	54	1,609	129	155	283	110	
1881-85	9,600	749	34	69	126	76	1,572	71	144	264	159	
1886-90	9,550	754	43	70	117	83	1,579	90	146	245	174	
1891	9,431	153	10	13	31	15	1,622	106	138	329	159	
1892	9,420	163	7	11	28	18	1,730	74	117	297	191	
1893	9,410	129	5	15	17	15	1,371	53	159	181	159	

(A)—Table of DEATHS during the Year 1893, in the Rural Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.										
	At all ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.		1	2	3
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	Small Pox.	Scarlatina.	Diphtheria
North Sub-district.....	50	6	2	4	—	20	18	Under 5 5 upwards.			
Petworth Parish	36	4	4	4	—	13	11	Under 5 5 upwards.			
Rest of South Sub-district ...	35	7	—	—	6	12	10	Under 5 5 upwards.			
Petworth Workhouse	4	—	—	—	—	3	1	Under 5 5 upwards.			
Wisborough Green Workhouse	3	—	—	—	—	—	3	Under 5 5 upwards.			
Petworth Cottage Hospital ...	—	—	—	—	—	—	—	Under 5 5 upwards.			
Isolation Hospital	1	—	—	—	—	—	1	Under 5 5 upwards.	1		
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
TOTALS..	129	17	6	8	6	48	44	Under 5 5 upwards.	1		
The subjoined numbers have also to be taken into											
Deaths occurring outside the District among persons belonging thereto.....								Under 5 5 upwards.			
Deaths occurring within the District among persons not belonging thereto...								Under 5 5 upwards.			

of PETWORTH, classified according to Diseases, Ages, and Localities.

MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN
UNDER FIVE YEARS OF AGE.

[illegible]

count in judging of the above records of mortality.

[illegible]

(B)—TABLE OF POPULATION, BIRTHS, AND OF NEW CASES

Officer of Health, during the year 1893, in the Rural Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	POPULATION AT ALL AGES.		Registered Births.	Aged under 5 or over 5.	NEW CASES OF SICKNESS COMING TO THE KNOWLEDGE OF THE OFFICER OF HEALTH.					
	Census 1891.	Esti- mated to mid- dle of 1893.			1	2	3	4	5	6
					Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	FEVER— Typhus.	Enteric or Typhoid.
(a.)	(b.)	(c.)	(d.)	(e.)						
North Sub-district	3,983	3,970	109	Under 5 5 upwards.						
Petworth Parish	2,831	2,825	73	Under 5 5 upwards.		1 4				
Rest of South Sub-district ...	2,545	2,550	69	Under 5 5 upwards.			1 1			
Petworth Workhouse	33	32		Under 5 5 upwards.		3				
Wisborough Green Workhouse	36	30		Under 5 5 upwards.						
Petworth Cottage Hospital...	3	3		Under 5 5 upwards.						
Isolation Hospital.....				Under 5 5 upwards.		1				
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
TOTALS	9,431	9,410		Under 5 5 upwards.		1 4	1 11			

F INFECTIOUS SICKNESS, coming to the knowledge of the Medical
 of PETWORTH; classified according to DISEASES, AGES, and LOCALITIES.

[illegible]

THAKEHAM
RURAL SANITARY AUTHORITY.

pp. 49 et seq.

RURAL SANITARY DISTRICT OF THAKEHAM.

The population in this registration district was 7,765 at the census of 1841, and 7,434 in 1851; chiefly owing to alteration in area, it rose to 8,036 in 1861; since 1871 there has been a steady decline in the numbers living.

The following figures relate to the present rural sanitary area which is co-extensive with the registration district :—

	1861.	1871.	1881.	1891.
Area in Statute Acres ..	—	40,025	40,636	40,636
Number of Inhabited Houses .	1,590	1,689	1,652	1,610
„ Uninhabited „ .	64	79	131	113
Population	8,036	8,335	8,285	8,049
Males	4,121	4,274	4,247	4,194
Females	3,915	4,061	4,038	3,855

The above figures show that the population in this district is nearly stationary; the males, as is usual in rural areas, exceed the females, and there is an excess of aged people.

The chief occupation is agriculture, but many are also engaged in fruit growing, for which produce a market is found in Brighton and Worthing.

The following table shows the population in each parish over a term of thirty years; few unions, perhaps, could show less change in the time. Building operations are seldom carried on, except when a new house replaces an old one. The number of uninhabited houses is less now than in 1881, but much higher than it was in the previous decades :—

	HOUSES, 1891.			POPULATION.					
	Inhabited.	Un-inhabited.	Building.	Persons, 1861.	Persons, 1871.	Persons, 1881.	Persons, 1891.	Males, 1891.	Females, 1891.
PULBOROUGH SUB-DISTRICT:—									
North Stoke ..	21	—	—	58	95	103	100	59	41
Amberley ..	114	5	—	456	535	570	525	288	237
Rackham ..	29	1	—	194	151	161	134	72	62
Greatham ..	12	—	—	51	60	59	66	40	26
Hardham ..	23	—	—	87	117	101	124	68	56
Cold Waltham ..	83	13	—	447	426	389	338	168	170
Wiggonholt ..	7	—	—	34	39	38	52	29	23
Pulborough ..	380	31	2	1,852	1,855	1,808	1,787	905	882
West Chiltington ..	144	13	2	668	701	664	620	352	268
WASHINGTON SUB-DISTRICT:—									
Parham ..	12	2	—	71	65	88	58	33	25
Storrington ..	246	17	—	1,104	1,184	1,351	1,293	633	660
Sullington ..	32	5	—	241	159	200	212	105	107
Thakeham ..	88	7	—	559	631	534	486	274	212
Warminghurst ..	16	2	—	106	140	97	70	37	33
Ashington ..	47	2	—	234	277	213	219	110	109
Wiston ..	64	2	—	311	311	357	352	189	163
Washington ..	142	8	—	908	908	844	838	438	400
Findon ..	150	5	2	655	681	708	775	394	381

BIRTHS AND BIRTH-RATE.

During the year 1893 the births of 207 children were registered, of these 111 were male, and 96 were female.

Estimating the population in the middle of the year at 8,000, the birth-rate was equal to 25·9 per 1,000 persons living, a rate lower than that recorded in any year previous to 1892.

The births and birth-rate during the past ten years have been as follows :—

Year.	Births.	Birth-rate.	Year.	Births.	Birth-rate.
1884 ..	247 ..	29·9	1889 ..	232 ..	28·4
1885 ..	261 ..	31·6	1890 ..	210 ..	25·9
1886 ..	220 ..	26·6	1891 ..	223 ..	27·7
1887 ..	246 ..	29·7	1892 ..	185 ..	23·0
1888 ..	230 ..	28·0	1893 ..	207 ..	25·9

The mean number of births is 226, and the mean birth-rate is 27·7 per 1,000 of population.

In England and Wales the birth-rate during the year was 30·8 per 1,000 persons living, a rate 1·1 per 1,000 below the mean rate in the ten years, 1883—92.

The following table shows the births and birth-rate in each locality during the past three years :—

			Births.				Birth-rate.		
			1891.	1892.	1893.		1891.	1892.	1893.
Amberley Parish	..	..	14	14	18	..	26·6	27·0	34·6
Pulborough Parish	..	..	48	50	61	..	26·1	27·9	34·1
Rest of Pulborough Sub-district			33	29	37	..	23·3	20·3	26·0
Storrington Parish	..	..	32	31	24	..	24·7	24·4	19·0
Washington Parish	..	..	24	15	17	..	28·6	17·8	20·2
Rest of Washington Sub-district			72	46	50	..	33·0	21·1	23·0
Total ..	..		223	185	207	..	27·7	23·0	25·9

There has been a steady decline in the birth-rate during the last twenty years ; young people leave the villages and find employment in large towns, for it is useless for them to remain at home, where there can be no demand for work.

GENERAL MORTALITY.

There were 120 deaths registered in this district during the year 1893, but to this number must be added the death of one person in the Worthing Infirmary belonging to this area, making a total of 121. There were also 11 deaths in Thakeham Workhouse, and these have been distributed amongst the several parishes whence each inmate came, viz., Rackham 1, Coldwaltham 2, Pulborough 3, West Chiltington 1, Storrington 2, Thakeham 1, and Washington 1, in all 11.

There was one death in Worthing Infirmary belonging to Findon.

Estimating the population in the middle of the year at 8,000, the death-rate was equal to 15·1 per 1,000 persons living.

In country places throughout England and Wales the mortality in 1893 was equal to 17·4 per 1,000 of population.

The variations in the death-rate during the past 10 years have been as follows :—

Year.	Deaths.	Death-rate.	Year.	Deaths.	Death-rate.
1884 ..	126 ..	15·2	1889 ..	127 ..	15·5
1885 ..	119 ..	14·4	1890 ..	101 ..	12·4
1886 ..	118 ..	14·3	1891 ..	126 ..	15·6
1887 ..	123 ..	14·9	1892 ..	146 ..	18·2
1888 ..	106 ..	12·9	1893 ..	121 ..	15·1

Thus there have been during the above period 1,213 deaths and a mean mortality of 14·8 per 1,000. During the same period there were 2,260 births, so that the natural increase of population by excess of births over deaths was 1,047. The recent census returns, however, show that there has been a *decrease* of 236, so that a large number of persons must have left this district during the past decade.

The annual mortality is low, and it varies very slightly. Table 3 gives the death-rate for a period of eighteen years not only from all causes, but also from various groups of diseases. The low death-rate of Storrington is chiefly due to the presence of a large school in the village, whereby there are many young lives which contribute nothing to the mortality.

In each locality the deaths and death-rate for the past three years are here shown :—

	1891.	Deaths.	1892.	1893.	1891.	Death-rate.	1892.	1893.
Amberley Parish ..	9	9	9	..	17·1	17·3	17·3	
Pulborough Parish ..	35	42	31	..	19·5	23·5	17·3	
Rest of Pulborough Sub-district	22	34	23	..	15·3	23·8	16·2	
Storrington Parish ..	17	15	15	..	13·1	11·8	11·9	
Washington Parish ..	15	9	17	..	17·9	10·7	20·2	
Rest of Washington Sub-district	28	37	26	..	12·8	17·0	12·0	
Total ..	126	146	121	..	15·6	18·2	15·1	

In each parish the deaths were thus distributed :—

North Stoke ..	2	..	Parham ..	..	2
Amberley ..	9	..	Storrington ..	..	15
Rackham ..	6	..	Sullington ..	..	4
Greatham ..	none	..	Thakeham ..	..	3
Hardham ..	2	..	Warminghurst ..	..	1
Cold Waltham ..	4	..	Ashington ..	..	2
Wiggonholt ..	1	..	Wiston ..	..	2
Pulborough ..	31	..	Washington ..	..	17
West Chiltington ..	8	..	Findon ..	..	12
Total ..	121.				

INFANT MORTALITY.

The *infant mortality* is here given as measured by the number of deaths under one year of age to the total number of births in the year :—

	Births.	Deaths under one year.	Ratio to 1,000 Births.
Amberley Parish	18	none	—
Pulborough Parish	61	6	98
Rest of Pulborough Sub-district ..	37	2	54
Storrington Parish	24	2	83
Washington Parish	17	2	117
Rest of Washington Sub-district ..	50	6	120
Total	207	18	87

The mean annual rate in the five years 1888-92 was 85 per 1,000 births registered.

In England and Wales the proportion of deaths under one year of age to registered births was 159 per 1,000, the mean proportion in the preceding ten years having been 144.

ZYMOTIC MORTALITY.

The deaths were 15 in number, of which nine were among notifiable diseases, and six in the other class. The rate of mortality was therefore equal to 1·87 per 1,000.

	Cases.	Deaths.
Small-pox	none	none
Scarlatina	8	none
Diphtheria	10	4
Membranous Croup	none	none
Fevers. { Typhus	none	none
Enteric	17	4
Continued	none	none
Relapsing	none	none
Puerperal	none	none
Cholera	none	none
Erysipelas	8	1
Total	43	9

The deaths in the other classes were as follows :—

	Deaths.
Measles	none
Whooping Cough	4
Diarrhœa and Dysentery	2
Rheumatic Fever	none
Total	6

The Infectious Disease (Notification) Act, 1889, came into operation on January 1st, 1890, and the number of cases notified were 36 in 1890, 34 in 1891, 21 in 1892, and 43 in 1893, or a mean number of 33·5 per year in a population of 8,000.

The prevalence in each quarter of each notifiable disease is shown in the following table:—

	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
Scarlatina	2	4	1	1	8
Diphtheria	—	3	1	6	10
Enteric Fever	6	3	7	1	17
Erysipelas	1	—	3	4	8
Total..	9	10	12	12	43

ENTERIC FEVER.

On January 12th I visited the Union Workhouse where I found there were four cases of enteric fever. On that date there were resident in the House five officers and 56 inmates.

The 56 inmates were as follows:—

Adults.		Children.		Total.
Male.	Female.	Male.	Female.	
24	19	7	6	56

None of the males and none of the children were attacked. The 19 adult females include the case of Flora Floate, aged 15 years, who used to mix with some of the women, her elder sister being also an inmate. Of these 19 females, 14 were not able-bodied, and they lived in different rooms from the remaining five who were in health up to the end of December last. Of these five females, four were attacked with enteric fever, the exception being an old woman who seems to be the only one now who can do any work (Sarah Duke).

The four fever cases were as follows:—

1. Harriet Pescott, 34 years, admitted to Infirmary on December 30th, 1892.
2. Ellen Peacock, 32 years, admitted to Infirmary on January 2nd, 1893.
3. Flora Floate, 15 years, admitted to Infirmary on January 6th, 1893.
4. Jane Floate, 19 years, an inmate of the Infirmary for months.

These 4 women, with Sarah Duke, chiefly occupied a room marked No. 2 on the enclosed rough plan, but they had also recently occupied room No. 3. They were thus kept separate in a great measure from all the other inmates, and there must have been some common cause to produce the illness from which these women are suffering. The milk supply and the water supply were not at fault, nor could the disease be attributed to any article of food.

The one defect to which these women, but not the rest, were exposed, was a blocked-up drain under the ash-pit in the able-bodied women's yard.

In the floor of the ash-pit there was a D-trap which drained the pit, and which also communicated with the space under the earth closets used by these women.

The drain, on being opened from the outside, was found to be blocked for several feet with black, offensive sewage, which was at once removed, and the drain was cleansed. The foul drain air coming up into the closet was the cause of the illness.

The cause was removed, and the outbreak ceased.

Shortly afterwards the drainage of the Workhouse was altered and put in good repair; there is no room now into which foul air can enter; all traps are placed in the open air, and a new main drain has been laid which carries all house refuse to a distant point in the garden where it is utilised. Earth closets are provided and these are kept in good condition.

Seven more cases of enteric fever were imported into the district from Worthing; most of these were girls in service there, who were sent home when the epidemic was prevalent, and when the first symptoms of illness appeared.

Each case was visited and care was taken to isolate the patient as far as possible, and to render harmless the excreta by disinfection and burial in the soil.

In two instances, another inmate of the cottage was attacked after the arrival of the first case, thus showing what I have often pointed out before, that in small cottages, enteric fever is often conveyed from one person to another.

The following table shows the condition of the people as regards age, sex, and marriage.

	All ages.	Under 15yrs.	15 to 20.	20 to 25.	25 to 35.	35 to 45.	45 to 55.	55 to 65.	65 and over.
Un-married	M. 2,627 F. 2,237	1,546 1,388	430 311	265 202	208 168	87 77	40 42	28 29	23 20
Married	M. 1,378 F. 1,351	— —	— 5	40 78	276 314	338 343	303 283	230 202	191 126
Widowed	M. 189 F. 267	— —	— —	— 1	7 11	9 21	28 42	41 55	104 137
Total 8,049 persons	M. 4,194 F. 3,855	1,546 1,388	430 316	305 281	491 493	434 441	371 367	299 286	318 283

SYSTEMATIC INSPECTION.

In my two previous reports the sanitary condition of Pulborough and Storrington was given in detail after a house-to-house inspection. The result has been that much good has been effected, and many minor nuisances have been abated.

This year Amberley and Findon were inspected in a similar manner, and I here give the report of Mr. E. J. Grivell, the Sanitary Inspector, on these parishes.

AMBERLEY.

WATER SUPPLY.

The water supply of the parish is derived from 70 wells, sunk in the upper green sand and chalk beds, ranging from 20 to 100ft. in depth.

There are two houses where the occupiers obtain their drinking water which is very thick, and of a doubtful quality, but the other houses appear to have a supply of water which is of a clear and good quality.

The means adopted for raising the water are the following viz. :— 36 ordinary lift-pumps, three deep well force-pumps, and 34 ordinary wells.

The pumps are in good repair, but the kerbing and covers to five of the wells are in a broken and rotten state, and below the level of the surrounding ground, which allows surface water to run into the wells, and the water is liable to become somewhat polluted.

DRAINAGE.

The closet accommodation consists chiefly of the closet known as the privy, and 96 houses are provided with this kind of closet; two with earth closets, seven with wash-out pan and traps, six with short hoppers, and one with a pan and container closet.

The 69 privies are built at a distance from the houses ranging from 15ft. to 150ft. Thirty privies are seated and in good condition, and 39 privies have open cesspits, without any vaults or coverings, which allows rain and soakage water to find its way into the large holes and is very offensive; five of these are very dilapidated, the walls, seats, roofs, and flooring being very rotten.

There are two earth closets which are well kept, care being taken to use earth or dry ash dust.

Two of the wash-out pans and trap sars without a water supply, the eight short hoppers are handflushed, and the pan and container closet is of a defective kind. They often become very foul as it is impossible to flush them properly.

One of the soilpipes is inside the house, and it is ventilated with a 2½in. pipe to the ridge of roof, four of the closets are ventilated from the pipe outside with a 4in. pipe, two with 2½in. pipes, and seven are not ventilated at all.

The drainage from most of the houses are the open brick channels which flow into the street drains.

There are five gully, and six bell traps for five houses, but the bell traps are very imperfect and defective, as the seal is readily broken by lifting the top.

There is an open channel running from Mr. Ruff's side of a garden, for a distance of 80yds. to the bridge, where it flows between the meadows and reaches the river. This stream takes most of the surface water and the waste water from the houses, and becomes very foul at certain periods, but at present it is in a fair condition, having been recently cleaned out.

The majority of the houses are in a clean condition, but there are three houses that require limewashing owing to the dirty state of walls.

RECOMMENDATIONS.—To remedy the defects which I have found, I would suggest the following: That the owners of two wells where the water is thick and muddy be called upon to have the wells cleaned out; and the owners of the five wells where the kerbing and woodwork are rotten, and below the surrounding ground, be called upon to have the woodwork and kerb raised up and made good 9in. above the level of ground, to prevent the soakage of dirty water into the well. With regard to the 39 closets known as the privy, I would suggest the following: The cesspits should be reduced in size and not exceed 12in. in depth and 3ft. square, and be built entirely above the level of surrounding ground; provision should be made for ventilation and for the throwing in of earth or ashes, and the prevention of soakage of water or rain into the cesspits.

The five closets which are broken should be repaired and altered, or converted into the pail system.

The owners of the houses with the two wash-outs and eight short hoppers, should be recommended to fix flushing tanks for supplying the pan and traps with water; the pan and container should be taken out and a wash-down fixed instead; the soilpipes to be fixed on an external wall and carried up above the eaves of the house by a 4in. pipe for ventilation. All soilpipes should be fixed on external walls to prevent foul gases entering the houses.

The bell traps at the five houses should be removed, and S. or P. gully traps fixed outside the houses, so that all the waste water empties into the open air.

The three dirty houses should be limewashed.

FINDON.

WATER SUPPLY.

The water supply of the parish is derived from wells sunk through the chalk beds, ranging from 100ft. to 300ft. in depth, and 76 rainwater tanks, 6ft. to 21ft. deep, and from 3ft. to 14ft. diameter.

The means adopting for raising the water from the deep wells, are two deep well force-pumps, worked with horse gearing, three with steam engines, and one with a windsail, and two with chain bucket windlass, and there are fourteen ordinary wells.

The means adopted for raising the water from the rainwater tanks are nine force pumps, 28 Jack pumps fixed inside, and 11 fixed outside of the houses, 19 by windlass, and 9 open kerbs where the occupiers have to draw the water by hand.

There are 19 broken kerbs and three broken pumps.

There are 43 houses where the tenants have a right of way to four deep wells, but a great many of the inhabitants depend entirely on their rainwater tanks for drinking purposes, and in dry seasons they have to fetch their water long distances.

DRAINAGE.

The closet accommodation, consists chiefly of the closet known as the privy. 127 houses are provided with 104 of this kind, 16 houses with 18 earth closets, nine with 20 wash-outs, one with Jennings' plunge closet, three with container closets, three with long hoppers, and two with short hoppers.

The privies are built attached to the houses, or at distances up to 120ft. from the houses; 70 of these have sealed cesspits, six with lean-to covers and ventilated, 28 have open cesspits; several of these are built on the external wall of the house and are very offensive.

The earth closets are well kept, plenty of dry earth being used. The 20 wash-out closets have flushing tanks and the soilpipes are on an external wall and ventilated above the eaves of the house.

The three long hoppers are very foul, without ventilation or water supply, the two short hoppers are clean and are handflushed, the four containers have flushing tanks, with the soilpipes outside and carried up above the eaves of the roof, three with 4in. pipes and one with a 1in. pipe from the bend.

There are 44 gully traps outside, seven bell traps, four inside and three outside the house, three grease traps, and three disconnecting traps.

There are 20 cesspools, six of which are ventilated.

There are three broken roofs where the rain finds its way into the bedrooms.

RECOMMENDATIONS.—To remedy the defects which I have found I would suggest the following:—

The 19 broken kerbs should be raised 9in. above the level of the surrounding ground in bricks or stone set in cement, to prevent dirty water and particles of manure, and vegetable matter washing into the well from the ground and polluting the water. The broken pumps should be repaired and the brick work made good.

The cesspits of the 28 closets should be filled in and a small cesspit 12in. deep by 3ft. with a brick on edge riser with trap doors and ventilated should be built, or the pail system used so that it would require frequent emptying, and be less offensive. The three long hoppers should be removed, and the pail system used, the four pan closets should be taken out and be replaced by the closet known as the wash-down, the 1in. ventilation pipe should be replaced by a 4in. pipe, and the seven bell traps be taken out, and replaced by gully traps fixed outside the house. All cesspools should be cut off from the house by a disconnecting trap to prevent syphonage of traps, to ventilate the soilpipe, and to prevent foul gases gaining access to the house.

The three broken roofs should be repaired.

In Amberley and Findon Parishes some of the work as suggested has been carried out and most of the owners have promised to make the alterations so as to comply with the Public Health Acts.

In addition to the above, the following is a summary of work done:—

Nuisances reported	..	..	..	..	..	95
Nuisances abated without notice	..	..	..	..	..	86
Nuisances abated with notice	..	..	..	..	..	9
Houses reported unfit for habitation	..	..	..	..	..	1
Houses closed	..	..	..	..	..	1
Houses cleansed and limewashed	..	..	..	..	..	43
Houses disinfected	..	..	..	..	..	20
Wells cleansed	..	..	..	:	..	10
Wells dug for improved supply	..	..	..	..	..	5
Closets attended and improved	..	..	..	..	..	48
Closets attended and the earth system used (pails)	..	..	..	..	..	8
New closets built	..	..	..	..	..	28
New houses built	..	..	..	..	..	11
Water certificates granted	..	..	..	..	..	11
Cesspools filled up	..	..	..	..	..	10
S. and P. traps fixed	..	..	..	..	..	34
Top of wells repaired	..	..	..	..	..	23
Legal proceedings	..	..	..	..	..	none

SCAVENGING AND CLEANSING.

In the Parish of Storrington the contractor collects the ashes and empties all pail closets every Saturday morning. During the year he has emptied and removed the contents of 34 ash pits, 146 cesspools, 53 privies, and 1,452 pails.

COWSHEDS AND DAIRIES.

The sixteen cowsheds are in most cases well kept, care being taken that there is good water, ventilation, light, and frequent lime washing.

SLAUGHTER HOUSES.

The twelve slaughter houses are kept in a fair condition.

BAKEHOUSES.

The fifteen bakehouses have been often inspected, and they are kept in a clean condition.

Inquests were held in seven cases:—Male, 43 years, suicide by shooting; male, 44 years, accidentally drowned; female, 65 years, accidental fall; female, 72 years, suicide by drowning; male, 10 months, pleurisy; male, 75 years, accidentally drowned; female, 2 months, accidentally suffocated.

No deaths were returned as “not certified.”

THAKEHAM RURAL SANITARY DISTRICT.

TABLE 1.—Showing the Deaths at various groups of ages in the thirteen years, 1881-93.

Year.	At all Ages.	Under 1 Year.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and upwards.
1881-85... ..	583	80	58	30	27	182	206
1886-90.. ...	575	85	56	23	28	166	217
1891	126	25	6	5	6	33	51
1892	146	16	7	6	5	50	62
1893	121	18	9	10	11	35	38
Total...	1,551	224	136	74	77	466	574

THAKEHAM RURAL SANITARY DISTRICT.

TABLE 2.—Showing the Deaths in the eighteen years, 1876-93 from various causes.

Year.		Small-pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Fevers.					Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhoea.	Rheumatic Fever.	Influenza.	Total.
						Typhus.	Enteric.	Continued.	Relapsing.	Puerperal.								
1876-80	...	—	11	1	—	1	2	—	—	—	—	3	4	39	11	1	—	73
1881-85	...	—	8	13	—	1	4	—	—	2	—	5	1	5	5	1	—	45
1886-90	...	1	5	16	—	—	6	—	—	4	—	4	3	14	9	—	4	66
1891	...	—	1	—	—	—	1	—	—	—	—	—	—	2	2	1	1	8
1892	...	—	—	2	—	—	—	—	—	—	—	—	1	3	1	1	20	28
1893	...	—	—	4	—	—	4	—	—	—	—	1	—	4	2	—	1	16
Total..		1	25	36	—	2	17	—	—	6	—	13	9	67	30	4	26	236

THAKEHAM RURAL SANITARY DISTRICT.

TABLE 3.—Showing the Deaths and Death-rate from all causes and from various causes in the eighteen years 1876-93.

YEAR	Deaths during the years 1876-93 from						Mean Annual Death-rate per 100,000 living from					
	Population in middle of period.	All Diseases.	Zymotic Disease.	Phthisis.	Lung Disease.	Heart Disease.	All Diseases.	Zymotic Disease.	Phthisis.	Lung Disease.	Heart Disease.	
1876-80	8,330	651	73	62	114	56	1,563	180	148	273	134	
1881-85	8,280	583	45	63	105	43	1,410	108	152	253	104	
1886-90	8,200	575	62	51	114	60	1,389	150	128	276	140	
1891	8,054	126	7	8	22	13	1,564	87	99	273	161	
1892	8,030	146	8	7	19	14	1,818	99	87	236	174	
1893	8,000	121	15	8	11	19	1,512	187	100	237	137	

(A)—Table of DEATHS during the Year 1893, in the Rural Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.										
	At all ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.		1	2	3
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	Small Pox.	Scarlatina.	Diphtheria.
Amberley Parish	9	—	1	—	—	6	2	Under 5 5 upwards.			1
Pulborough Parish	28	6	—	3	1	9	9	Under 5 5 upwards.			1
Rest of Pulborough Sub-district	19	2	2	3	2	4	6	Under 5 5 upwards.			
Storrington Parish	13	2	—	1	3	4	3	Under 5 5 upwards.			1
Washington Parish	16	2	1	2	3	4	4	Under 5 5 upwards.			1
Rest of Washington Sub-district	24	6	5	1	2	5	5	Under 5 5 upwards.			
Thakeham Workhouse	11	—	—	—	—	2	9	Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
TOTALS.....	120	18	9	10	11	34	38	Under 5 5 upwards.			4
The subjoined numbers have also to be taken into											
Deaths occurring outside the District among persons belonging thereto.....	1	—	—	—	—	1	—	Under 5 5 upwards.			
Deaths occurring within the District among persons not belonging thereto...								Under 5 5 upwards.			

(B)—TABLE OF POPULATION, BIRTHS, AND OF NEW CASES

Officer of Health, during the year 1893, in the Rural Sanitary District

Names of Localities adopted for the purpose of these Statistics ; Public Institutions being shown as separate localities. (a.)	POPULATION AT ALL AGES.		Registered Births. (d.)	Aged under 5 or over 5. (e.)	NEW CASES OF SICK- COMING TO THE KNOWLEDGE OF					
	Census 1891. (b.)	Esti- mated to mid- dle of 1893. (c.)			1	2	3	4	5	6
					Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	FEVERS. Typhus. Enteric or Typhoid.	
Amberley Parish.....	525	520	18	Under 5 5 upwards.			1			
Pulborough Parish	1,787	1,790	61	Under 5 5 upwards.		1	4			1
Rest of Pulborough Sub-district	1,434	1,420	37	Under 5 5 upwards.						2
Storrington Parish	1,293	1,260	24	Under 5 5 upwards.		2	2			
Washington Parish	838	840	17	Under 5 5 upwards.		1	3			2
Rest of Washington Sub-district	2,095	2,110	47	Under 5 5 upwards.		1 3				6
Thakeham Workhouse.....	78	60	3	Under 5 5 upwards.						6
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
TOTALS	8,049	8,000	207	Under 5 5 upwards.		1 7	10			17

OF INFECTIOUS SICKNESS, coming to the knowledge of the Medical
of THAKEHAM; classified according to DISEASES, AGES, and LOCALITIES.

[illegible]

EAST PRESTON
RURAL SANITARY AUTHORITY.

pp. 69 et seq.

RURAL SANITARY DISTRICT OF EAST PRESTON.

The population in this registration district was 17,568 at the census of 1841, and 18,746 in 1851; owing chiefly to changes in the area, it declined to 17,423 in 1861; after which period it rose to 21,579 in 1871, to 26,364 in 1881 and to 32,394 in 1891. These figures, however, include the urban districts of Worthing and Littlehampton, which rapidly increased during this period, and Arundel with its almost stationary population. The following figures show only the changes in the rural part of the district.

	1861.	1871.	1881.	1891.
Area in Statute Acres ..	—	30,520	30,696	30,637
Number of Inhabited Houses ..	1,355	1,467	1,662	1,805
„ Uninhabited „ ..	45	77	87	75
Population	6,716	7,674	8,025	8,692
Males	3,450	3,900	4,065	4,371
Females	3,266	3,775	3,960	4,321

The males exceed the females but to a less extent now than in former periods as some parts of the district are semi-urban in character.

West Tarring has increased rapidly during the last decade, and it now forms a suburb of Worthing, with which, before long, a portion of the parish should be incorporated.

That portion of Lyminster, known as Wick, forms a suburb of Littlehampton, and it contains a numerous and poor population.

The chief occupation is agriculture, but a great many are also employed in fruit growing, or in the cultivation of gardens.

The following table shows the population in each parish over a long term of years :—

	HOUSES, 1891.			POPULATION.						
	Inhabited.	Un- inhabited.	Building.	Persons, 1861.	Persons, 1871.	Persons, 1881.	Persons, 1891.	Males, 1891.	Females, 1891.	
WORTHING SUB-DISTRICT:—										
Broadwater (1)	220	6	—	661	1,228	(1) 841	1,016	483	533	
Heene (2)	..	..	—	140	151	156	(2) ..	..	..
West Tarring	213	12	7	606	656	733	1,035	544	491	
Clapham ..	51	3	—	249	246	239	270	150	120	
Durrington	33	6	—	171	165	181	153	82	71	
Goring ..	129	4	—	535	464	528	561	277	284	
Ferring ..	54	7	—	253	267	232	226	111	115	
LITTLEHAMPTON SUB-										
DISTRICT:—										
Kingston ..	12	1	—	45	27	34	43	18	25	
East Preston	57	4	—	320	331	420	414	212	202	
Angmering (part of)	183	6	—	953	1,041	848	883	441	442	
Lyminster (part of)	276	5	—	801	1,071	1,178	1,320	699	621	

Rustington	..	..	91	5	1	340	359	360	434	190	244
Climping ..	..	..	54	6	..	331	261	270	251	138	113
Ford ..	..	..	20	..	..	82	73	100	102	48	54
ARUNDEL SUB-DISTRICT:—											
Tortington	..	..	58	1	3	112	138	165	288	134	154
Lyminster (part of) (3) ..	..	..	81	3	..	..	..	(3) 409	373	169	204
Poling ..	..	..	43	..	..	203	174	179	178	84	94
Angmering (part of) (3)	..	..	27	1	..	..	..	(3) 135	131	72	59
Patching ..	..	..	55	2	..	275	268	274	270	141	129
Warningcamp	..	..	34	3	..	107	159	128	159	81	78
Burpham ..	..	..	52	..	..	256	304	286	280	146	134
South Stoke	..	..	24	..	..	111	108	133	131	66	65
Houghton	..	..	38	..	..	165	189	196	174	85	89

(1) Part of Broadwater transferred to Worthing in 1875.

(2) Rural part of Heene transferred to the Borough of Worthing in 1890.

(3) On October 1st, 1883, parts of the parishes of Angmering and Lyminster were transferred from the Sub-district of Littlehampton to that of Arundel.

BIRTHS AND BIRTH-RATE.

During the year 1893 the births of 260 children were registered, of these 133 were male, and 127 were female.

Estimating the population in the middle of the year at 8,800, the birth-rate was equal to 29·5 per 1,000 persons living.

The births and birth-rate during the past ten years have been as follows :—

Year.	Births.	Birth-rate.	Year.	Births.	Birth-rate.
1884 ..	247 ..	29·5	1889 ..	230 ..	26·5
1885 ..	234 ..	27·5	1890 ..	204 ..	23·4
1886 ..	246 ..	28·8	1891 ..	244 ..	28·0
1887 ..	241 ..	28·1	1892 ..	204 ..	23·3
1888 ..	226 ..	26·2	1893 ..	260 ..	29·5

The mean number of births is 234, and the mean birth-rate is 27·1 per 1,000 of population.

In England and Wales the birth-rate during the year was 30·8 per 1,000 persons living, a rate 1·1 per 1,000 below the mean rate in the ten years, 1883—92.

The following table shows the births and birth-rate in each locality during the past three years :—

	1891.	Births. 1892.	1893.		1891.	Birth-rate. 1892.	1893.
Worthing Sub-district ..	93	81	113	..	28·5	24·5	33·8
Littlehampton Sub-district ..	110	83	103	..	31·7	24·0	29·8
Arundel Sub-district ..	41	40	44	..	20·7	20·0	22·0
Total ..	224	204	260	..	28·0	23·3	29·5

In the Arundel Sub-district there is a thinly scattered agricultural population with an excess of people at advanced periods of life; hence the birth-rate is low.

GENERAL MORTALITY.

There were 152 deaths registered in this district during the year 1893, but from this number must be deducted the deaths of ten persons belonging to urban areas, outside this district. Of these ten persons, five came from Worthing, three from Littlehampton, and two from Arundel.

There were also eight other deaths in the Workhouse, and these have been distributed among the several parishes whence each inmate came, viz., Broadwater 1, West Tarring 1, Clapham 1, Goring 1, East Preston 2, Lyminster 1, Poling 1; in all 8.

There must be added the deaths of three persons in Worthing Infirmary of whom two belonged to Broadwater, and one to Goring. The total number of deaths belonging to this district amounts therefore to 145.

Estimating the population in the middle of the year at 8,800, the death-rate was equal to 16·5 per 1,000 persons living.

In country districts throughout England and Wales the rate of mortality in 1893 was equal to 17·4 per 1,000 of population.

The variations in the death-rate [during the past 10 years have been as follows :—

Year.	Deaths.	Death-rate.	Year.	Deaths.	Death-rate.
1884 ..	116	13·9	1889 ..	116	13·4
1885 ..	132	15·5	1890 ..	122	14·0
1886 ..	106	12·4	1891 ..	123	14·1
1887 ..	114	13·3	1892 ..	143	16·3
1888 ..	108	12·5	1893 ..	145	16·5

The mean number of deaths is 122, and the mean death-rate is 14·2 per 1,000. During this decade there were 2,336 births, so that the natural increase of births over deaths was 1,111.

The actual increase was 817, but as Heene with its 150 people was transferred to Worthing, the real increase was 667.

The following table shows the deaths and death-rate in each locality during the past three years.

	Deaths.				Death-rate.		
	1891.	1892.	1893.		1891.	1892.	1893.
Worthing Sub-district	50	65	63	..	15·3	19·7	18·9
Littlehampton Sub-district	49	41	55	..	14·1	11·9	15·9
Arundel Sub-district	24	37	27	..	12·1	18·5	13·5
Total ..	123	143	145	..	14·1	16·3	16·5

In each parish the deaths were thus distributed :—

Broadwater ..	24	..	Climping ..	5
West Tarring ..	24	..	Ford ..	2
Clapham ..	4	..	Tortington ..	4
Durrington ..	2	..	Lyminster (north) ..	5
Goring ..	7	..	Poling ..	5
Ferring ..	2	..	Angmering (north) ..	none
Kingston ..	1	..	Patching ..	3
East Preston ..	5	..	Warningcamp ..	3
Angmering (south) ..	9	..	Burpham ..	1
Lyminster (south) ..	27	..	South Stoke ..	3
Rustington ..	6	..	Houghton ..	3
Total ..	145.			

Table 1 shows the deaths occurring at different groups of ages; the mortality is very low from five to twenty-five years of age, while more than one-third die aged sixty-five years and upwards.

Table 2 shows the deaths during the past eighteen years, not only from the principal zymotic diseases, but from all the members of the group included in Tables A and B. The deaths in the first eleven columns relate to notifiable diseases, and in the next five columns to non-notifiable diseases.

Table 3 is of interest as it shows the death-rate from various causes over a term of eighteen years; there was a steady decline down to the period 1886-90, since which time there has been a rise; this is chiefly due to the prevalence of influenza and lung diseases since 1890, and to the epidemic of enteric fever in 1893.

INFANT MORTALITY.

The *infant mortality* is here given as measured by the number of deaths under one year of age to the total number of births in the year:—

			Births.	Deaths under one year.	Ratio to 1,000 Births.
Worthing Sub-district	..	..	113	9	80
Littlehampton Sub-district	..	..	103	11	126
Arundel Sub-district	..	..	44	3	68
Total..			260	23	88

The mean annual rate in the five years 1888-92 was 87 per 1,000 registered births.

In England and Wales the proportion of deaths under one year of age to registered births was 159 per 1,000, during the past year, the mean proportion in the preceding ten years having been 144.

ZYMOTIC MORTALITY.

There were 28 deaths from zymotic disease in the case of those which are notifiable, and there were 10 deaths in the other class where the number of cases cannot be obtained.

Adding the two classes together, there is a total of 38 deaths with a zymotic mortality of 4·3 per 1,000.

				Cases.	Deaths.
	Small-pox	..	..	5	none
	Scarlatina	..	..	14	1
	Diphtheria	..	..	5	3
	Membranous Croup	..	..	3	2
Fever.	Typhus	..	..	none	none
	Enteric	..	..	119	22
	Continued	..	..	none	none
	Relapsing	..	..	none	none
	Puerperal	..	..	none	none
	Cholera	..	..	none	none
	Erysipelas	..	..	10	none
Total				156	28

In the other classes the deaths were as follows:—

	Deaths.
Measles	2
Whooping Cough	3
Diarrhœa and Dysentery ..	5
Rheumatic Fever	none
Total ..	10

The Infectious Diseases (Notification) Act, 1891, came into operation in this district on March 1st, 1891, and on the same day the Infectious Disease (Prevention) Act, 1890, also took effect.

On March 21st, 1891, the Public Health Acts Amendment Act, 1890, Part III., came into operation.

The prevalence in each quarter of each infectious disease is shown in the following table:—

	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
Small-pox	—	5	—	—	5
Scarlatina	1	2	7	4	14
Diphtheria	2	2	1	—	5
Membranous Croup	2	—	—	1	3
Enteric Fever ..	4	6	99	10	119
Erysipelas	2	1	5	2	10
Total ..	11	16	112	17	156

SMALL-POX.

In a small poor cottage in Wick Street there lived Mr. and Mrs. P., with an infant nine months old.

The cottage was in the parish of Lyminster, about half-a-mile north of Littlehampton.

On May 1st Mrs. P., aged 23 years, was taken ill, and on the 4th inst. some spots appeared on the face, and on May 7th it was declared to be small-pox. This woman had been vaccinated when an infant, but not since. She had not been from home, nor was any small-pox known to be in the neighbourhood, so that no history of infection could be made out. There had been in the spring many cases of small-pox at Horsham, Petworth, and other places, in which there was reason to believe that the disease was conveyed by tramps who had the disorder in a mild and unrecognised form. There was here the history of a tramp having lodged at the cottage a few days previous to May 1st, and then he went on to Brighton and thence to Sandgate. Mrs. Collard, the mother of Mrs. P., lived with her family at an old, isolated cottage at Toddington, a place about a mile distant, so that the families often met. When the nature of the disease was made clear, Mr. P., 23 years, kept at home from work, and as no nurse could be obtained, Mrs. Collard came to look after her daughter. Food and bedding were provided, and this group of persons was isolated as far as possible. By May 27th Mrs. P. was well again and the house was disinfected and cleansed. No other case occurred in the village street, although the neighbourhood was rather crowded, and isolation was difficult. The case, however, was most carefully attended to by Mr. Vail, the Sanitary Inspector.

At Toddington there were the following inmates in Coppard's house:—

Robert C., 48 years.
 Selina C., 13 years.
 Walter C., 10 years.
 Ellen P., 19 years.
 James W., 20 years.
 Mildred C., 7 years.
 Sarah C., 3 years.

On May 6th when Mrs. P. was ill and had a rash, but before it was notified as small-pox, Robert C. and his daughter Selina called at the cottage and saw Mrs. P. Selina was taken ill on May 18th, and Robert C. on May 19th, with small-pox in a mild form, and on June 5th, the two youngest children Mildred and Sarah also had modified small-pox.

Isolation in this case was easier; all the cases recovered and there was no further spread.

In each case, the patient had been vaccinated when young, but of the quality of the vaccination no definite information was obtained. Revaccination was performed in the case of all inmates above ten years of age, but Mildred and Sarah, being so young, it was not thought to be needful.

Besides revaccination, isolation was carried out by keeping the healthy inmates confined to the house or to the garden, and by providing them with all the food they required and any bedding that was wanted.

When recovery took place, the rooms were not only disinfected freely with burning sulphur and then cleansed, but all infected bedding and clothing were burnt in the adjacent garden.

In the two houses there were 3 male and 2 female adults and 5 children; of these ten inmates, 1 male and 1 female adult, and 3 children were attacked.

ENTERIC FEVER.

The outbreak of enteric fever in Broadwater and West Tarring is described in a special report on the Worthing Epidemic. The two areas are so intimately connected that the one cannot be understood without knowing the circumstances of the other.

There were some additional scattered cases of enteric fever at Lyminster, Angmering, Warningcamp, Salvington, Tortington, Goring, and Burpham, nearly all of which were imported into these parishes from Worthing. The three cases in East Preston Workhouse contracted the disease before admission.

WATER SUPPLY.

During the year a water main was laid from the West Worthing Waterworks to a high spot on the Downs to the north of West Tarring, where a covered reservoir is in course of construction. This will enable a constant supply in future to take the place of the intermittent supply in the areas of West Worthing and West Tarring. The dangers attending an intermittent supply with defective hydrants were detailed in my last annual report, and additional confirmation was given in the course of the summer, when the epidemic spread to West Tarring chiefly through the pollution of the public water supply. In West Tarring, most of the defective hydrants had been promptly removed, and they had been replaced by others of a far better construction, whereby pollution from surface water could not occur, but in West Worthing no alteration was made.

SEWAGE AND DRAINAGE.

No main works were undertaken during the year and the general system remains the same as before. West Tarring is the only place which has a main system and this, dealing only with a part of the village, is in connection with the Worthing system.

In nearly all the other parishes, the houses are scattered and each cottage has garden space on which any refuse matter could be utilised. On the whole there has been much improvement in recent years, and the sanitary surroundings of most of the houses are much better than at former periods.

Wick, however, still remains in a very bad state ; the water supply is derived from shallow wells and the gardens near the houses are full of cesspits whence the contents soak away and pollute the subsoil. This question has been often brought before the Authority, but nothing has yet been done.

SCAVENGING AND CLEANSING.

The Parochial Committees of Broadwater and West Tarring meet frequently and they supervise the work of scavenging which is carried out by a contractor.

BAKEHOUSES.

The fifteen bakehouses have been frequently inspected and they have been well kept.

SLAUGHTER HOUSES.

These are six in number, and they have been kept in good order, but they require frequent inspection to see that no nuisance arises.

COWSHEDS AND DAIRIES.

The twenty-six cowsheds have been regularly inspected and kept clean ; no disease of any animals was recorded during the year.

There is no Common Lodging House in the district.

No Proceedings were taken before the magistrates during the year.

No Article of Food was condemned as unfit for use.

SYSTEMATIC INSPECTION.

No. of Nuisances reported	..	..	..	..	127
No. of Nuisances abated without notice	..	..	..	..	106
No. of Nuisances abated with notice	..	..	..	..	21
Houses cleansed and limewashed	..	..	..	..	59
Houses disinfected	..	..	..	..	33
Beds, &c., burned	..	..	..	..	11
Beds replaced	..	..	..	..	11
Water certificates granted	..	..	..	..	41
Insufficient water supply	..	..	..	..	2
Wells cleansed	..	..	..	..	12
Samples of water analysed	..	..	..	..	14
Samples of water polluted	..	..	..	..	7
Cases of overcrowding reported	..	..	..	..	5
Cases of overcrowding abated	..	..	..	..	5
Privies altered and improved	..	..	..	..	13
Drains taken up and re-laid	..	..	..	..	4
Legal proceedings	..	..	..	..	none

INQUESTS were held in fifteen cases :—Female, 13 hours, inanition due to premature birth ; male, 80 years, accidental fall ; male, 58 years, accidental fall ; male, 45 years, lung disease ; male, 17 years, accidentally run over by a train ; female, 12 months, convulsions ; male, 80 years, accidental fall ; male, 8 months, acute pleurisy ; male, 67 years, drowned in the sea ; male, 63 years, accidentally run over by a train ; male, 49 years, suicide ; female, 23 months, accidentally scalded ; male, 40 years, suicide by drowning ; male, 26 years, found drowned in the river Arun ; male, 2 weeks, natural causes.

There were two deaths returned as “not certified” :—Male, 6 weeks, convulsions ; male, 62 years, heart disease.

EAST PRESTON RURAL SANITARY DISTRICT.

TABLE 1.—Showing the Deaths at various groups of ages in the thirteen years, 1881-93.

Year.	At all Ages.	Under 1 Year.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and upwards.
1881-85... ..	603	100	53	35	28	185	202
1886-90.. ...	566	82	50	30	34	149	221
1891	123	25	8	5	6	35	44
1892	143	19	11	7	6	41	59
1893	145	23	16	15	11	43	37
Total...	1,580	249	138	92	85	453	563

TABLE 2.—Showing the Deaths in the eighteen years, 1876-93 from various causes.

Year.		Small-pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Fevers.					Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhoea.	Rheumatic Fever.	Influenza.	Total.
						Typhus.	Enteric.	Continued.	Relapsing.	Puerperal.								
1876-80	...	—	11	8	—	—	9	1	—	—	—	2	4	8	19	—	—	62
1881-85	...	—	8	17	—	—	1	—	—	1	—	2	9	8	7	2	—	55
1886-90	...	—	5	13	—	—	1	—	—	1	—	—	1	17	16	—	—	54
1891	..	—	—	—	—	—	2	—	—	—	—	2	2	2	2	—	4	14
1892	...	—	—	2	—	—	2	—	—	—	—	—	—	1	1	—	8	14
1893	...	—	1	3	2	—	22	—	—	—	—	—	2	3	5	—	1	39
Total..	—	—	25	43	2	—	37	1	—	2	—	6	18	39	50	2	13	238

EAST PRESTON RURAL SANITARY DISTRICT.

TABLE 3.—Showing the Deaths and Death-rate from all causes and from various causes in the eighteen years 1876-93.

YEAR	Deaths during the years 1876-93 from					Mean Annual Death-rate per 100,000 living from					
	Population in middle of period.	All Diseases.	Zymotic Disease.	Phthisis.	Lung Disease.	Heart Disease.	All Diseases.	Zymotic Disease.	Phthisis.	Lung Disease.	Heart Disease.
1876-80	7,710	634	62	68	81	57	1,645	161	176	209	148
1881-85	8,330	603	55	54	84	62	1,452	133	130	201	149
1886-90	8,620	566	54	44	92	56	1,286	123	100	209	128
1891	8,712	123	10	8	23	10	1,412	114	92	263	114
1892	8,750	143	6	9	33	15	1,634	68	103	377	171
1893	8,800	145	38	14	19	9	1,648	432	159	216	102

(A)—Table of DEATHS during the Year 1893, in the Rural Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities. (a)	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.							(i)	1	2	3
	At all ages. (b)	Under 1 year. (c)	1 and under 5. (d)	5 and under 15. (e)	15 and under 25. (f)	25 and under 65. (g)	65 and upwards. (h)		Small Pox.	Scarlatina.	Diphtheria.
Worthing Sub-district	56	8	3	9	5	19	12	Under 5 5 upwards.			1
Littlehampton Sub-district ...	52	11	11	4	2	14	10	Under 5 5 upwards.		1	2
Arundel Sub-district	26	2	2	2	2	8	10	Under 5 5 upwards.			
East Preston Workhouse	18	2	—	—	1	3	12	Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
TOTALS.....	152	23	16	15	10	44	44	Under 5 5 upwards.		1	3
The subjoined numbers have also to be taken into											
Deaths occurring outside the District among persons belonging thereto.....	3	—	—	—	2	1	—	Under 5 5 upwards.			
Deaths occurring within the District among persons not belonging thereto...	10	—	—	—	1	2	7	Under 5 5 upwards.			

of EAST PRESTON, classified according to Diseases, Ages, and Localities.

MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN
UNDER FIVE YEARS OF AGE.

[illegible]

account in judging of the above records of mortality.

[illegible]

(B)—TABLE OF POPULATION, BIRTHS, AND OF NEW CASES

Officer of Health, during the year 1893, in the Rural Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	POPULATION AT ALL AGES.		Registered Births.	Aged under 5 or over 5.	NEW CASES OF SICK- COMING TO THE KNOWLEDGE OF					
	Census 1891.	Esti- mated to mid- dle of 1893.			1	2	3	4	5	6
					Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	FEVERS.	
(a.)	(b.)	(c.)	(d.)	(e.)					Typhus.	Enteric or Typhoid.
Worthing Sub-district	3,261	3,340	113	Under 5						7
				5 upwards.		3	2			97
Littlehampton Sub-district ...	3,285	3,300	100	Under 5	1	1	1			
				5 upwards.	4	3	2	3		9
Arundel Sub-district	1,984	2,000	44	Under 5		1				
				5 upwards.		6				3
East Preston Workhouse	162	160	3	Under 5						
				5 upwards.						3
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
TOTALS	8,692	8,800	260	Under 5	1	2	1			7
				5 upwards.	4	12	4	3		112

OF INFECTIOUS SICKNESS, coming to the knowledge of the Medical
of EAST PRESTON; classified according to DISEASES, AGES, and LOCALITIES.

[illegible]

MIDHURST
RURAL SANITARY AUTHORITY.

pp. 87 et seq.

RURAL SANITARY DISTRICT OF MIDHURST.

The population in this registration district was 13,325 at the census of 1841, and 13,599 in 1851; there was then a decline owing to alterations in the area, and from 1861 onwards there has been a steady increase, as is shown in the following statement.

The figures here given relate to the present rural sanitary area which is co-extensive with the registration district.

	1861.	1871.	1881.	1891.
Area in Statute Acres ..	—	65,695	66,571	66,744
Number of Inhabited Houses ..	2,473	2,621	2,801	2,919
„ Uninhabited „ ..	88	79	136	188
Population	12,608	13,042	13,965	14,236
Males	6,545	6,767	7,185	7,216
Females	6,063	6,275	6,780	7,020

The males exceed the females in number, but the excess is not so great as in former years. There is a great increase in the number of empty houses, although there is also an increase in the number of occupied dwellings. In most of the parishes, the population is stationary or declining, and year by year the older houses cease to be occupied.

In Easebourne, however, considerable building operations have been going on in recent years, and the increase in the population and in the number of inhabited houses is wholly due to the growth on this area.

The following table gives some interesting facts concerning the population of each parish from 1861 to 1891:—

	HOUSES, 1891.			POPULATION.					
	Inhabited.	Un-inhabited.	Building.	Persons, 1861.	Persons, 1871.	Persons, 1881.	Persons, 1891.	Males, 1891.	Females, 1891.
MIDHURST SUB-DISTRICT:—									
East Lavington ..	36	—	—	190	210	221	191	95	96
West Lavington ..	47	4	3	176	195	151	218	95	123
Tillington ..	195	8	—	908	843	886	871	429	442
Lodsworth ..	151	13	3	629	660	682	645	341	304
Selham ..	8	—	—	123	34	49	48	26	22
Heyshott ..	91	9	—	396	386	448	393	227	166
Grafham ..	84	2	—	416	435	413	407	227	180
Cocking ..	90	9	—	430	493	574	449	251	198
Midhurst ..	334	33	—	1,340	1,465	1,615	1,674	782	892
Woolbeding ..	66	—	—	338	306	362	361	173	188
Easebourne ..	264	14	1	859	881	1,048	1,392	684	708
South Ambersham ..	34	1	—	143	151	124	186	100	86
FERNHURST SUB-DISTRICT:—									
North Ambersham ..	32	2	—	111	168	167	170	78	92

Lurgashall	..	..	146	10	—	727	742	732	762	416	346
Fernhurst	..	..	232	15	—	845	897	1,091	1,133	586	547
Linchmere	..	..	67	4	—	283	303	346	351	176	175
Linch ..	..	..	21	3	—	111	111	99	98	48	50
HARTING SUB-DISTRICT:—											
Stedham ..	..	..	122	8	—	530	502	541	558	261	297
Iping ..	..	..	106	7	—	404	521	523	530	275	255
Trotton ..	..	..	86	3	—	452	399	405	451	223	228
Chithurst	..	..	60	3	—	215	295	334	297	151	146
Terwick ..	..	..	36	2	—	152	132	185	190	100	90
Rogate ..	..	..	207	11	—	990	999	986	953	481	472
Harting ..	..	..	278	14	2	1,247	1,277	1,274	1,279	676	603
Elsted ..	..	..	40	3	—	174	175	208	191	89	102
Treyford ..	..	..	23	3	—	123	143	147	114	58	56
Didling ..	..	..	14	3	—	85	94	85	61	30	31
Bepton ..	..	..	49	4	—	211	220	269	263	138	125

BIRTHS AND BIRTH-RATE.

During the year 1893 the births of 393 children were registered, of these 204 were male, and 189 were female.

Estimating the population in the middle of the year at 14,280 the birth-rate was equal to 27·5 per 1,000 persons living.

The births and birth-rate in the district during the past ten years have been as follows:—

Year.	Births.	Birth-rate.	Year.	Births.	Birth-rate.
1884 ..	419 ..	29·6	1889 ..	366 ..	25·7
1885 ..	406 ..	28·6	1890 ..	348 ..	24·4
1886 ..	419 ..	29·5	1891 ..	353 ..	24·7
1887 ..	345 ..	24·3	1892 ..	356 ..	24·9
1888 ..	399 ..	28·0	1893 ..	393 ..	27·5

The mean number of births is 380, and the mean birth-rate is 26·7 per 1,000 of population.

In England and Wales the birth-rate during the year was 30·8 per 1,000 persons living, a rate 1·1 per 1,000 below the mean rate in the ten years, 1883—92.

The following table shows the births and birth-rate in each locality during the past three years:—

		1891.	Births. 1892.	1893.		1891.	Birth-rate. 1892.	1893.
Midhurst Parish ..	..	41	41	47	..	24·5	24·4	28·0
Easebourne Parish ..	..	47	38	32	..	33·8	26·6	22·0
Rest of Midhurst Sub-district		85	99	112	..	22·5	26·4	29·9
Fernhurst Sub-District ..	..	65	65	73	..	25·8	25·8	29·0
Harting Sub-District ..	..	115	113	129	..	23·5	23·1	26·4
Total ..	..	253	356	393	..	24·7	24·9	27·5

GENERAL MORTALITY.

There were 183 deaths registered in this district during the year 1893, and of these, thirteen took place in Easebourne Workhouse. These thirteen deaths have been distributed amongst the several parishes whence each inmate came, viz., Midhurst 1, Easebourne 1, Lurgashall 1, Fernhurst 1, Linch 1, Iping 1, Trotton 1, Chithurst 1, Terwick 1, Rogate 1, Harting 1, Elsted 1, Diding 1; in all 13.

Estimating the population in the middle of the year at 14,280, the death-rate was equal to 12·8 per 1,000 persons living.

In country districts throughout England and Wales the rate of mortality in 1893 was 17·4 per 1,000 of population.

The variations in the death-rate during the past 10 years have been as follows :—

Year.	Deaths.	Death-rate.	Year.	Deaths.	Death-rate.
1884 ..	230 ..	16·2	1889 ..	157 ..	11·0
1885 ..	233 ..	16·4	1890 ..	191 ..	13·4
1886 ..	243 ..	17·1	1891 ..	267 ..	18·7
1887 ..	219 ..	15·4	1892 ..	247 ..	17·3
1888 ..	191 ..	13·4	1893 ..	183 ..	12·8

The mean number of deaths is 216, and the mean death-rate is 15·2 per 1,000 of population.

There have been during this decade 3,804 births, so that the natural increase of population by excess of births over deaths was 1,643. The actual increase as shown by the Census returns was 271, so that a large number of persons must have left the district.

The following table shows the deaths and death-rate in each locality during the past three years.

		Deaths.				Death-rate.		
		1891.	1892.	1893.		1891.	1892.	1893.
Midhurst Parish	..	39	31	22	..	23·3	18·4	13·1
Easebourne Parish	..	24	31	10	..	17·2	21·7	6·9
Rest of Midhurst Sub-dist.		84	72	60	..	22·3	19·2	16·0
Fernhurst Sub-district		43	39	26	..	17·1	15·5	10·3
Harting Sub-district	..	77	74	65	..	15·7	15·1	13·3
Total		267	247	183	..	18·7	17·3	12·8

In each parish the deaths were thus distributed :—

East Lavington	..	6	..	Fernhurst	..	..	15
West Lavington	..	3	..	Linchmere	..	..	none
Tillington	..	13	..	Linch	..	..	1
Lodsworth	..	12	..	Stedham	..	..	7
Selham	..	..none	..	Iping	..	..	3
Heyshott	..	8	..	Trotton	..	..	4
Graffham	..	3	..	Chithurst	..	..	6
Cocking	..	5	..	Terwick	..	..	1
Midhurst	..	22	..	Rogate	..	..	14
Woolbeding	..	6	..	Harting	..	..	21
Easebourne	..	10	..	Elsted	..	..	2
South Ambersham	..	4	..	Treyford	..	..	2
North Ambersham	..	1	..	Didling	..	..	2
Lurgashall	..	9	..	Bepton	..	..	3
Total		..	183.				

INFANT MORTALITY.

The *infant mortality* is here given as measured by the number of deaths under one year of age to the total number of births in the year :—

				Births.	Deaths under one year.	Ratio to 1,000 Births.
Midhurst Parish	..	..	..	47	5	106
Easebourne Parish	..	..	..	32	0	—
Rest of Midhurst Sub-district			..	112	10	89
Fernhurst Sub-district	..	..		73	3	41
Harting Sub-district	..	..	..	129	10	77
Total..				393	28	71

In England and Wales the proportion of deaths under one year of age to registered births was 159 per 1,000, during the past year, the mean proportion in the preceding ten years having been 144.

The mean annual death-rate in the five years 1888-92 was 90 per 1,000 registered births.

ZYMOTIC MORTALITY.

The deaths from zymotic disease were 9 in the case of those which are notifiable, and 7 in the other class where the number of cases cannot be obtained.

Adding the two classes together, there is a total of 16 deaths with a zymotic mortality of 1·1 per 1,000.

					Cases.	Deaths.
Fevers.	Small-pox	..	..	..	none	none
	Scarlatina	..	..	..	15	none
	Diphtheria	..	..	..	44	5
	Membranous Croup	..	..	..	none	none
	Typhus	..	..	..	none	none
	Enteric	..	..	..	13	1
	Continued	..	..	..	none	none
	Relapsing	..	..	..	none	none
	Puerperal	..	..	..	1	none
	Cholera	..	..	..	none	none
	Erysipelas	..	..	..	12	3
Total				..	85	9

In the other class the deaths were as follows:—

				Deaths.
Measles	..	..	..	5
Whooping Cough	..	..	..	2
Diarrhoea and Dysentery	..	..	..	none
Rheumatic Fever	..	..	..	none
Total				7

The prevalence in each quarter of each infectious disease is shown in the following table:—

	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
Scarlatina	2	5	2	6	15
Diphtheria	14	14	11	5	44
Enteric Fever ..	—	2	4	7	13
Puerperal Fever ..	1	—	—	—	1
Erysipelas	2	3	1	6	12
Total..	19	24	18	24	85

The Infectious Disease (Notification) Act, 1889, came into operation in this district on January 1st, 1890. There were 55 cases notified in 1890, 83 in 1891, 100 in 1892, and 85 in 1893, giving in four years a total of 323 cases in a population of 14,236.

SCARLATINA caused no deaths, but a few isolated cases were met with in different parts of the district, six out of the fifteen cases occurred in one family.

DIPHTHERIA was far more prevalent, and it appeared chiefly in Harting and Bepton. From 1876 to 1880, it frequently broke out in the parishes of Fernhurst, Lurgashall, and Linchmere, which lie to the north of the district. In recent years a case is seldom met with in that area, but it has appeared in the parishes which lie to the south of the district.

ENTERIC FEVER was imported on three occasions from Worthing, and once from Portsmouth; all these patients were servants who were sent home, and developed the disease after their arrival.

The following table shows the condition of the people as regards age, sex, and marriage:—

		All ages.	Under 15yrs.	15 to 20.	20 to 25.	25 to 35.	35 to 45.	45 to 55.	55 to 65.	65 and over.
Un- married	{ M. 4,500	2,621	705	504	346	139	93	49	43	
	{ F. 4,187	2,529	570	411	354	136	93	50	44	
Married	{ M. 2,393	—	2	60	524	595	517	377	318	
	{ F. 2,363	—	4	125	586	622	482	347	197	
Widowed	{ M. 323	—	—	—	10	21	41	69	182	
	{ F. 470	—	—	1	5	38	74	106	246	
Total 14,236 persons	{ M. 7,216	2,621	707	564	880	755	651	495	543	
	{ F. 7,020	2,529	574	537	945	796	649	503	487	

Table 1 shows that more than one-third of the deaths are at 65 years of age and upwards; in this healthy district people live to an advanced age.

Table 2 shows that diphtheria is a more frequent cause of death than any other infectious disorder; it is closely followed by whooping cough, and at a long distance by enteric fever, measles, and scarlatina.

Table 3 gives a summary of the death-rate from various groups of diseases during the past eighteen years. The general death-rate is low, except in 1891 and 1892 when influenza and lung diseases were very prevalent.

There is no injurious trade carried on in the district. The people are chiefly engaged in agriculture, although many are employed in market gardening, or in woods and copses.

The people, as a rule, are well housed, and the number of old tumble-down dwellings is gradually diminishing. To each cottage there is generally a large garden, the produce from which proves of much value to the household. The cheapness of the necessary articles of food, and the improvement in the sanitary surroundings of the cottages make the life of an agricultural labourer easier and more comfortable than in former times. There still remains much to be done by the individual himself in seeing that his water supply is carefully protected, that all refuse is regularly removed and utilised on the soil, and that the interior of the dwelling is kept clean and sweet.

WATER SUPPLY.

Midhurst is still in great need of a good supply of wholesome water. Nothing has yet been done, but there is some prospect in the coming year that such a supply will be obtained. The water supply of the district remains the same as it has been described in previous reports.

DRAINAGE AND SEWAGE.

Midhurst is the only place which has any urgent need for a system of sewerage and sewage disposal. The question has been much discussed by the Authority during the past year, and indeed for many years past; plans have now been prepared by Mr. A. G. Gibbs to drain the town, and to utilise the sewage on some land by means of broad irrigation. It is important, however, to remember that a water supply is the first thing which should be provided.

PUBLIC ELEMENTARY SCHOOLS.

Improvements have been made in the offices of the following schools during the past year:—

Chithurst, Rogate, and Lodsworth :—Privies converted into earth closets, and fitted with Moule's self-acting apparatus and moveable receptacles.

Easebourne, Fernhurst, Tillington, and Woolbeding :— Privies converted into earth closets with fixed receptacles ; the earth is thrown in by hand.

The Education Department has pressed forward sanitary alterations in schools in this district, and also in Petworth, and the managers in all cases have done their best to remedy defects ; a decided improvement has been the result.

BY-LAWS.

The by-laws for the regulation of slaughter houses, adopted in 1892, have been confirmed by the Local Government Board ; seven slaughter houses have been registered, and three have been licensed.

Building by-laws have been adopted for the whole of the district, and they are now awaiting confirmation by the Local Government Board.

By-laws under Sect. 23 of the Public Health Acts Amendment Act, 1890, have been framed and adopted.

SYSTEMATIC INSPECTION.

No. of Houses visited	453
No. of Nuisances	215
No. of Nuisances abated without notice	200
No. of Nuisances abated with notice	13
No. of Houses reported unfit for habitation ..	2
No. of Houses disinfected	29
No. of Houses cleansed	45
Water certificates granted	21
Wells dug	3
Wells cleansed	6
Cases of overcrowding	10
Cases of overcrowding abated	10
Closets erected	4
Earth Closets provided	6
Samples of water analysed	16
Samples of water polluted	3
Legal proceedings	—

MARGARINE is sold in a few shops, and it is sold in accordance with the requirements of the Act.

THE BAKEHOUSES are limewashed twice a year. They are very well kept, and in no case is there any drain within the building.

THE SLAUGHTER HOUSES are very fairly kept, and any refuse or offal is removed as soon as possible ; the walls are regularly limewashed.

Ten cases of OVERCROWDING were abated during the year.

No ARTICLES OF FOOD were condemned during the year.

No Proceedings were taken before the Magistrates during the past year.

INQUESTS were held in seven cases :—Male, 49 years, tumour in left side ; female, 41 years, found drowned ; female, 73 years, accidental fall into a well ; male, 36 years, accidentally poisoned by taking aconite liniment ; male, 70 years, accidental fall off a straw rick ; male, 11 years, natural causes ; female, 52 years, fracture of the skull by falling downstairs.

There were two deaths returned as “not certified” :—Male, 8 hours, premature birth ; female, 5 months, unknown.

MIDHURST RURAL SANITARY DISTRICT.

TABLE 1.—Showing the Deaths at various groups of ages in the thirteen years, 1881-93.

Year.	At all Ages.	Under 1 Year.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and upwards.
1881-85... ..	1,096	184	111	64	65	306	366
1886-90.. ...	1,001	150	88	43	45	285	390
1891	267	45	26	16	10	69	101
1892	247	38	24	13	17	78	77
1893	183	28	16	10	12	46	71
Total...	2,794	445	265	146	149	784	1,005

MIDHURST RURAL SANITARY DISTRICT.

TABLE 2.—Showing the Deaths in the eighteen years, 1876-93 from various causes.

Year.		Small-pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Fevers.					Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhœa.	Rheumatic Fever.	Influenza.	Total.
						Typhus.	Enteric.	Continued.	Relapsing.	Puerperal.								
1876-80	...	4	3	14	—	1	10	2	—	1	—	3	7	17	12	5	—	79
1881-85	...	6	22	27	—	—	10	—	—	1	—	10	7	13	10	4	—	110
1886-90	...	—	2	12	—	—	12	—	—	2	—	1	11	23	5	4	5	77
1891	..	—	—	4	1	—	—	—	—	—	—	—	1	7	—	2	12	27
1892	...	—	—	12	—	—	—	—	—	—	—	1	—	7	1	1	25	47
1893	...	—	—	5	—	—	1	—	—	—	—	3	5	2	—	—	9	25
Total...		10	27	74	1	1	33	2	—	4	—	18	31	69	28	16	51	365

MIDHURST RURAL SANITARY DISTRICT.

TABLE 3.—Showing the Deaths and Death-rate from all causes and from various causes in the eighteen years 1876-93.

YEAR	Deaths during the years 1876-93 from						Mean Annual Death-rate per 100,000 living from					
	Population in middle of period.	All Diseases.	Zymotic Disease.	Phthisis.	Lung Disease.	Heart Disease.	All Diseases.	Zymotic Disease.	Phthisis.	Lung Disease.	Heart Disease.	
1876-80	13,690	1,063	79	119	117	126	1,552	115	174	170	182	
1881-85	14,130	1,096	110	102	150	105	1,540	154	143	211	147	
1886-90	14,210	1,001	72	95	153	111	1,356	98	128	207	150	
1891	14,235	267	15	14	52	22	1,875	105	98	365	154	
1892	14,260	247	22	22	31	27	1,732	154	154	217	189	
1893	14,280	183	16	14	24	15	1,282	112	98	168	105	

(A)—Table of DEATHS during the Year 1893, in the Rural Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.								1	2	3
	At all ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.		Small Pox.	Scarlatina.	Diphtheria.
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)			
Midhurst Parish	21	5	4	—	2	3	7	Under 5 5 upwards.			2
Easebourne Parish	9	—	—	—	2	4	3	Under 5 5 upwards.			
Rest of Midhurst Sub-district	60	10	5	2	1	17	25	Under 5 5 upwards.			1
Fernhurst Sub-district	23	3	2	2	3	5	8	Under 5 5 upwards.			
Harting Sub-district	57	10	5	6	3	14	19	Under 5 5 upwards.			2
Easebourne Workhouse	13	—	—	—	1	3	9	Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
TOTALS.....	183	28	16	10	12	46	71	Under 5 5 upwards.			4 1
The subjoined numbers have also to be taken into											
Deaths occurring outside the District among persons belonging thereto.....								Under 5 5 upwards.			
Deaths occurring within the District among persons not belonging thereto...								Under 5 5 upwards.			

MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN UNDER FIVE YEARS OF AGE.																		
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Membranous Croup.	FEVERS.					Cholera.	Erysipelus.	Measles.	Whooping Cough.	Diarrhoea and Dysentery.	Rheumatic Fever.	Ague.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease.	Injuries.	All Other Diseases.	TOTAL.
	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.													
									2					2			3	9
													1		3		8	12
													1	1	1	1	5	9
								1						6			8	15
		1					2	1					6	6	4	1	23	45
														1			4	5
													1		1		16	18
								2						1			10	15
							1	1					5	6	4	3	22	42
														1	2		10	13
								3	2					10			25	44
		1					3	2					14	14	15	5	84	139

[illegible]

(B)—TABLE OF POPULATION, BIRTHS, AND OF NEW CASES

Officer of Health, during the year 1893, in the Rural Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	POPULATION AT ALL AGES.		Registered Births.	Aged under 5 or over 5.	NEW CASES OF SICK- COMING TO THE KNOWLEDGE OF					
	Census 1891.	Esti- mated to mid- dle of 1893.			1	2	3	4	5	6
					Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	FEVERS.	
									Typhus.	Enteric or Typhoid.
(a.)	(b.)	(c.)	(d.)	(e.)						
Midhurst Parish	1,674	1,680	47	Under 5 5 upwards.			1 6			
Easebourne Parish	1,296	1,360	30	Under 5 5 upwards.		1	1 1			
Rest of Midhurst Sub-district	3,769	3,750	112	Under 5 5 upwards.		1 6				
Fernhurst Sub-district	2,514	2,520	73	Under 5 5 upwards.			1			
Harting Sub-district	4,887	4,880	129	Under 5 5 upwards.			2 24			
Easebourne Workhouse	95	90	2	Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
TOTALS	14,236	14,280	393	Under 5 5 upwards.		2 13	4 40			

OF INFECTIOUS SICKNESS, coming to the knowledge of the Medical
of MIDHURST; classified according to DISEASES, AGES, and LOCALITIES.

[illegible]

WESTBOURNE
RURAL SANITARY AUTHORITY.

pp. 105 et seq.

*

RURAL SANITARY DISTRICT OF WESTBOURNE.

The population in this registration district was 6,669 at the census of 1841, and 6,944 in 1851; it then rose steadily up to 1881, since which period it has declined; this decrease is not to be accounted for by any change in area.

The following figures relate to the present rural sanitary area which is co-extensive with the registration district.

	1861.	1871.	1881.	1891.
Area in Statute Acres ..	—	32,886	32,040	32,040
Number of Inhabited Houses ..	1,427	1,495	1,533	1,516
„ Uninhabited „ ..	43	56	66	112
Population	6,957	7,221	7,420	7,084
Males	3,502	3,611	3,742	3,678
Females	3,455	3,610	3,552	3,532

The number of males, as is usual in rural districts, exceeds the females, and there was a decline in the population in the decade 1881-91; up to that time there had been a steady increase in the previous thirty years.

The number of uninhabited houses shows a marked decrease, while at the same time there is an increase in the number of those which are occupied.

The people are chiefly engaged in agriculture, but many are engaged in fishing at Bosham and Hermitage; most of the cottages are in good order, and surrounded by a good garden.

The following table shows some interesting facts about each parish for a long term of years:—

	HOUSES, 1891.			POPULATION.					
	Inhabited.	Un- inhabited.	Building.	Persons, 1861.	Persons, 1871.	Persons, 1881.	Persons, 1891.	Males, 1891.	Females, 1891.
WESTBOURNE DISTRICT :—									
West Dean	120	1	—	681	683	732	611	315	296
East Marden	17	2	—	63	81	91	74	36	38
North Marden	6	—	—	28	27	39	39	25	14
Up Marden	65	10	—	366	365	336	310	169	141
Stoughton	120	4	—	633	603	626	604	319	285
Compton	61	7	—	266	286	289	268	136	132
Racton	22	—	—	95	97	97	100	48	52
Funtington	237	22	2	1,099	1,065	1,108	1,020	495	525
Bosham	274	11	2	1,158	1,184	1,255	1,258	619	639
Chidham	53	7	—	310	314	266	241	124	117
West Thorney	34	2	—	93	181	131	150	83	67
Westbourne	507	46	3	2,165	2,335	2,450	2,409	1,183	1,226

BIRTHS AND BIRTH-RATE.

During the year 1893 the births of 183 children were registered, of these 94 were male, and 89 were female.

Estimating the population in the middle of the year at 7,030 the birth-rate was equal to 26·0 per 1,000 persons living.

The births and birth-rate in the district during the past ten years have been as follows :—

Year.	Births.	Birth-rate.	Year.	Births.	Birth-rate.
1884 ..	222 ..	30·3	1889 ..	203 ..	28·4
1885 ..	212 ..	29·0	1890 ..	207 ..	29·1
1886 ..	208 ..	28·6	1891 ..	194 ..	27·4
1887 ..	225 ..	31·1	1892 ..	203 ..	28·8
1888 ..	204 ..	28·4	1893 ..	183 ..	26·0

The mean number of births is 206, and the mean birth-rate is 28·7 per 1,000 of population.

In England and Wales the birth-rate during the year was 30·8 per 1,000 persons living, a rate 1·1 per 1,000 below the mean rate in the ten years, 1883—92.

The following table shows the births and birth-rate in each locality during the past three years :—

		Births.				Birth-rate.		
		1891.	1892.	1893.		1891.	1892.	1893.
Funtington Parish ..	..	27	24	23	..	26·4	28·8	23·0
Bosham Parish ..	..	52	51	29	..	41·3	40·5	23·0
Westbourne Parish ..	..	59	62	70	..	24·4	25·7	29·2
Rest of Westbourne District		56	66	61	..	23·3	27·8	25·7
Total ..	..	194	203	183	..	27·4	28·8	26·0

GENERAL MORTALITY.

There were 126 deaths registered in this district during the year 1893, and of these, eleven took place in Westbourne Workhouse. These deaths have been distributed amongst the several parishes whence each inmate came, viz., Up Marden 1, Stoughton 1, Compton 1, Funtington 2, Bosham, 2, Chidham 1, Westbourne 3 ; in all 11.

Estimating the population in the middle of the year at 7,030, the death-rate was equal to 17·9 per 1,000 persons living.

In country districts throughout England and Wales the rate of mortality in 1893 was 17·4 per 1,000 of population.

The variations in the death-rate during the past 10 years have been as follows :—

Year.	Deaths.	Death-rate.	Year.	Deaths.	Death-rate.
1884 ..	97 ..	13·2	1889 ..	89 ..	12·4
1885 ..	125 ..	17·1	1890 ..	97 ..	13·6
1886 ..	132 ..	18·2	1891 ..	124 ..	17·5
1887 ..	108 ..	14·9	1892 ..	116 ..	16·4
1888 ..	96 ..	13·4	1893 ..	126 ..	17·9

The mean number of deaths is 110, and the mean death-rate is 15·5 per 1,000 of population.

There have been during the decade 2,061 births, so that the natural increase of population by excess of births over deaths was 951. The census returns, however, show a *decrease* of 336, so that large numbers must have left the district in the past decade.

The following table shows the deaths and death-rate in each locality during the past three years.

		Deaths.				Death-rate.		
		1891.	1892.	1893.		1891.	1892.	1893.
Funtington Parish	..	12	12	21	..	11·7	14·4	21·0
Bosham Parish	..	22	23	21	..	17·5	18·2	16·7
Westbourne Parish	..	51	49	44	..	21·1	20·4	18·3
Rest of Westbourne Dist.	..	39	32	40	..	16·9	13·6	16·9
Total		124	116	126	..	17·5	16·4	17·9

In each parish the deaths were thus distributed :—

West Dean ..	..	9	..	Racton ..	..	4
East Marden	..	none	..	Funtington ..	..	21
North Marden	..	1	..	Bosham ..	..	21
Up Marden ..	..	3	..	Chidham ..	..	4
Stoughton ..	..	10	..	West Thorney	..	4
Compton ..	..	5	..	Westbourne ..	..	44
Total		..	126.			

INFANT MORTALITY.

The *infant mortality* is here given as measured by the number of deaths under one year of age to the total number of births in the year :—

	Births.	Deaths under one year.	Ratio to 1,000 Births.
Funtington Parish ..	23	3	130
Bosham Parish ..	29	4	137
Westbourne Parish ..	70	9	128
Rest of Westbourne District ..	61	10	164
Total ..	183	26	142

The mean annual death-rate in the five years 1888-92 was 80 per 1,000 registered births.

In England and Wales the proportion of deaths under one year of age to registered births was 159 per 1,000 during the past year, the mean proportion in the preceding ten years having been 144.

ZYMOTIC MORTALITY.

The deaths from zymotic diseases were 8 in the case of those which are notifiable, and 14 in the other class where the number of cases cannot be obtained.

Adding the two classes together, there is a total of 22 deaths with a zymotic mortality of 3·1 per 1,000.

					Cases.	Deaths.
Fever.	Small-pox	..	..	..	none	none
	Scarlatina	..	..	..	11	none
	Diphtheria	..	..	..	46	5
	Membranous Croup	..	..	..	none	none
	Typhus	..	..	..	none	none
	Enteric	..	..	..	11	2
	Continued	..	..	..	none	none
	Relapsing	..	..	..	none	none
	Puerperal	..	..	..	3	none
	Cholera	..	..	..	none	none
	Erysipelas	..	..	..	14	1
Total					85	8

The prevalence in each quarter of each infectious disease is shown in the following table:—

			1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
Scarlatina	..	..	—	—	3	8	11
Diphtheria	..	..	—	10	14	22	46
Enteric Fever	..	..	—	2	8	1	11
Puerperal Fever	..	..	—	1	1	1	3
Erysipelas	..	..	3	2	7	2	14
Total..			3	15	33	34	85

ENTERIC FEVER was imported into the district on three occasions from Worthing, and two of these patients died ; four other inmates of the infected houses contracted the disease from the original cases.

DIPHTHERIA was very prevalent during the year at Bosham and in other parts of the district, but the cases were mostly mild in character and the mortality was small.

The following table shows the age, sex, and condition of the people as to marriage:—

	All ages.	Under 15yrs.	15 to 20.	20 to 25.	25 to 35.	35 to 45.	45 to 55.	55 to 65.	65 and over.
Un- married	{ M. 2,187 F. 2,022	1,313 1,284	344 247	192 190	200 160	71 67	34 37	49 22	14 15
Married	{ M. 1,222 F. 1,261	— —	— 5	26 62	244 286	299 337	290 287	196 167	167 117
Widowed	{ M. 143 F. 249	— —	— —	— —	5 7	6 27	15 28	22 56	95 131
Total 14,236 persons	{ M. 3,552 F. 3,532	1,313 1,284	344 252	218 252	449 453	376 431	339 352	237 245	276 263

WATER SUPPLY.

The water supply remains in the same state as detailed in previous reports.

At Bosham and Hermitage schemes for providing good and wholesome water have often been discussed, but nothing has been done.

During the long drought from March to June there was a great scarcity of water, and all the brooks and ponds became dry, and tanks for collecting rain water soon became empty.

DRAINAGE AND SEWAGE.

There is no public system of main drainage or sewerage in any part of the district. The condition of Bosham, Westbourne, and Hermitage is the same as that detailed in my eighteenth report.

There is an improvement in the sanitary surroundings of the cottages, although there is still a great want of cleanliness among many of the occupiers. As a rule, there is a fair-sized garden to each cottage, and it would be easy to utilize all the house refuse on the garden, so as to prevent any nuisance.

PUBLIC ELEMENTARY SCHOOLS.

The National School at Bosham is in a very unsatisfactory condition, as regards not only its sanitary condition, but its structure and position.

After I had made a report on the School it was closed for a time, and then a School Board was formed to take over the management.

This Board is now engaged in looking out for a site for a new school; in the meantime the old structure has been repaired, and it has been re-opened until a new building can be erected,

The following schools were closed for a time in consequence of the prevalence of epidemic disease:—

Name.						Cause
Bosham .. .. .	..	..	..	..	..	Measles
Forest Side, Stoughton	..	..	..	..	..	”
Funtington .. .. .	..	..	..	..	..	”
Fishbourne .. .. .	..	..	..	..	..	”
Westbourne .. .. .	..	..	..	..	..	”
West Dean .. .. .	..	..	..	..	..	”
West Thorney .. .. .	..	..	..	..	..	”
Bosham .. .. .	..	..	..	..	..	Diphtheria

LEGAL PROCEEDINGS.

An owner of a cottage was summoned before the Bench of Magistrates for allowing the house to be occupied, without having first obtained a certificate from the Sanitary Authority to the effect that there was, within a reasonable distance of the house, an available supply of wholesome water sufficient for the consumption and use for domestic purposes of the inmates of the house.

The proceedings were taken under Section 6 of the Public Health (Water) Act, 1878, and the owner was fined one shilling.

This was the first occasion on which the Act has been enforced in this district.

SYSTEMATIC INSPECTION.

The following is a summary of the work done by Mr. A. Rawlins, the Sanitary Inspector, during the past year. A number of minor nuisances are not reported, as they were abated at once on a verbal order or caution being given.

No. of Houses visited .. .. .	..	..	..	..	270
No. of Nuisances reported .. .. .	..	..	..	..	64
No. of Nuisances abated .. .. .	..	..	..	..	62
No. of Notices served .. .. .	..	..	..	..	50
No. of Houses reported unfit for habitation (4 are closed, 4 have been repaired, etc.) .. .. .	..	..	..	..	8
Houses cleansed and disinfected .. .. .	..	..	..	..	35
Houses cleansed and whitewashed .. .. .	..	..	..	..	8
Houses fumigated by Inspector .. .. .	..	..	..	..	16

Cases of overcrowding reported..	..	..	..	2
Cases of overcrowding abated ..	..	..	..	2
New closets erected ..	..	..	..	16
Old closets removed and re-constructed	..	..	..	2
Old closets converted into earth closets	..	..	..	2
Wells sunk ..	..	..	..	9
Wells cleaned ..	..	..	..	8
Samples of unwholesome food ..	..	..	..	0
Samples of water sent for analysis ..	..	..	..	9
Samples of water (not sent) unfit for drinking	..	..	..	3
Underground tanks ..	..	..	..	0

There is one COMMON LODGING HOUSE at Hermitage in which a few lodgers are taken ; this is very well kept.

There are now twenty registered COWSHEDS AND DAIRIES, but many of them are on a very small scale ; they are well kept.

MARGARINE is not in much demand, but in such cases the regulations of the Act are complied with ; the sale seems to decrease.

The BAKEHOUSES are fifteen in number ; they are often inspected and they are kept in a clean condition ; two new ones have been erected and two old ones have been closed.

There are five SLAUGHTER HOUSES which are very well attended to, three of these are small and used occasionally.

Two cases of OVERCROWDING were abated.

There was no case in which it was necessary to condemn meat or any other article of food.

SUNSHINE.

The following figures have been kindly sent to me by the Rev. L. B. Birkett, M.A., from the observations taken by him at Westbourne Rectory.

	1892.				1893.			
	Hours of bright sunshine.		Sunless days.		Hours of bright sunshine.		Sunless days.	
January	73·2	..	9	..	39·3	..	15	
February	88·3	..	7	..	82·3	..	6	
March	155·5	..	3	..	232·1	..	2	
April	241·7	..	1	..	305·7	..	0	
May	244·5	..	0	..	257·5	..	0	
June	243·6	..	1	..	256·0	..	2	
July	223·3	..	2	..	212·1	..	2	
August	204·0	..	0	..	248·9	..	1	
September	142·7	..	2	..	169·7	..	3	
October	123·6	..	5	..	136·3	..	7	
November	56·4	..	12	..	65·5	..	8	
December	63·0	..	10	..	64·6	..	8	
Total	1,859·8		52		2,070·0	..	54	

In 1890, there were 1,773·8 hours of bright sunshine, and 68 sunless days; in 1891, the numbers were 1,682·8 and 61 respectively.

RAINFALL.

	1892.			1893.	
	Amount in inches.	No. of rainy days.		Amount in inches.	No. of rainy days.
January	1·05	.. 11	..	1·68	.. 16
February	1·18	.. 14	..	3·18	.. 24
March	1·02	.. 10	..	·60	.. 7
April	1·05	.. 10	..	·07	.. 2
May	1·05	.. 7	..	·95	.. 7
June	1·78	.. 14	..	1·29	.. 7
July	3·52	.. 11	..	4·55	.. 13
August	3·24	.. 15	..	1·10	.. 9
September	3·07	.. 11	..	2·04	.. 16
October	4·15	.. 20	..	7·08	.. 22
November	3·41	.. 19	..	2·31	.. 17
December	2·43	.. 13	..	2·90	.. 18
Total	26·95	155		27·75	158

The rainfall in 1890 amounted to 24·13 in., and in 1891, to 35·94 in.

INQUESTS were held in five cases:—Male, 21 years, exhaustion following starvation; male, 40 years, accidental fall downstairs; male, 60 years, natural causes, kidney disease; female, 18 years, fracture of neck by accidentally falling whilst at play with a child in a meadow; male 59 years, heart disease.

There were three deaths returned as “not certified”:—Male, 41 years, rupture of an aneurism of the aorta; male, 3 days, convulsions; female, 30 minutes, premature birth.

WESTBOURNE RURAL SANITARY DISTRICT.

TABLE 1.—Showing the Deaths at various groups of ages in the thirteen years, 1881-93.

Year.	At all Ages.	Under 1 Year.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and upwards.
1881-85... ..	551	91	42	33	23	152	210
1886-90.. ...	522	90	45	16	25	140	206
1891	124	17	10	9	7	30	51
1892	116	22	9	10	3	27	45
1893	126	26	14	11	6	30	39
Total...	1,439	246	120	79	64	379	551

TABLE 2.—Showing the Deaths in the thirteen years, 1881-93 from various causes.

Year.		Small-pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Fevers.					Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhoea.	Rheumatic Fever.	Influenza.	Total.
						Typhus.	Enteric.	Continued.	Relapsing.	Puerperal.								
1881-85	—	—	1	18	—	—	12	—	—	1	—	4	1	9	6	—	—	52
1886-90	—	—	—	4	—	—	7	—	—	—	—	1	6	17	3	1	3	42
1891	—	—	—	6	—	—	1	—	—	—	—	1	—	3	1	—	6	18
1892	—	—	—	5	—	—	—	—	—	—	—	—	—	4	2	—	12	23
1893	—	—	—	5	—	—	2	—	—	—	—	1	8	1	2	3	7	29
Total...	—	—	1	38	—	—	22	—	—	1	—	7	15	34	14	4	28	164

WESTBOURNE RURAL SANITARY DISTRICT.

TABLE 3.—Showing the Deaths and Death-rate from all causes and from various causes in the thirteen years 1881-93.

YEAR	Deaths during the years 1881-93 from						Mean Annual Death-rate per 100,000 living from					
	Population in middle of period.	All Diseases.	Zymotic Disease.	Phthisis.	Lung Disease.	Heart Disease.	All Diseases.	Zymotic Disease.	Phthisis.	Lung Disease.	Heart Disease.	
1881-85	7,360	551	52	46	98	44	1,473	138	123	261	117	
1886-90	7,180	522	39	52	106	37	1,376	103	136	279	97	
1891	7,084	124	12	7	35	4	1,750	169	99	494	56	
1892	7,050	116	11	8	26	6	1,645	156	113	369	85	
1893	7,030	126	22	9	17	7	1,792	313	128	242	100	

(A)—Table of DEATHS during the Year 1893, in the Rural Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities. (a)	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.							(i)	1	2	3
	At all ages. (b)	Under 1 year. (c)	1 and under 5. (d)	5 and under 15. (e)	15 and under 25. (f)	25 and under 65. (g)	65 and upwards. (h)		Small Pox.	Scarlatina.	Diphtheria.
Funtington Parish	19	3	2	1	1	3	9	Under 5 5 upwards.			
Bosham Parish	19	4	3	2	2	4	4	Under 5 5 upwards.			1 1
Westbourne Parish	41	9	5	3	2	12	10	Under 5 5 upwards.			1 1
Rest of District	36	10	3	5	1	9	8	Under 5 5 upwards.			1
Westbourne Workhouse.....	11	—	1	—	—	2	8	Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
TOTALS.....	126	26	14	11	6	30	39	Under 5 5 upwards.			2 3
The subjoined numbers have also to be taken into											
Deaths occurring outside the District among persons belonging thereto.....								Under 5 5 upwards.			
Deaths occurring within the District among persons not belonging thereto...								Under 5 5 upwards.			

of WESTBOURNE, classified according to Diseases, Ages, and Localities.

MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN
UNDER FIVE YEARS OF AGE.

4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Membranous Croup.	FEVERS.					Cholera.	Erysipelus.	Measles.	Whooping Cough.	Diarrhoea and Dysentery.	Rheumatic Fever.	Ague.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease.	Injuries.	All Other Diseases.	TOTAL.
	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.													
								1									4	5
		1											2	2	2		7	14
										1				1			4	7
								1					1	2		2	5	12
								1		1				2			9	14
		1						1					4	3	3		14	27
									1					2			10	13
								3			3		1	2	2	1	10	23
								1										1
							1						1	3			5	10
								3	1	2				5			27	40
		2					1	5			3		9	12	7	3	41	86

account in judging of the above records of mortality.

[illegible]

(B)—TABLE OF POPULATION, BIRTHS, AND OF NEW CASES

Officer of Health, during the year 1893, in the Rural Sanitary District

Names of Localities adopted for the purpose of these Statistics ; Public Institutions being shown as separate localities.	POPULATION AT ALL AGES.		Registered Births.	Aged under 5 or over 5.	NEW CASES OF SICK- COMING TO THE KNOWLEDGE OF					
	Census 1891.	Esti- mated to mid- dle of 1893.			1	2	3	4	5	6
					Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	FEVERS.	
(a.)	(b.)	(c.)	(d.)	(e.)					Typhus.	Enteric or Typhoid
Funtington Parish	1,020	1,000	23	Under 5 5 upwards.						2
Bosham Parish	1,258	1,260	29	Under 5 5 upwards.			1 14			
Westbourne Parish	2,269	2,260	68	Under 5 5 upwards.		3 8	2 18			2
Rest of District	2,397	2,370	61	Under 5 5 upwards.			2 7			1 5
Westbourne Workhouse.....	140	140	2	Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
TOTALS	7,084	7,030	183	Under 5 5 upwards.		3 8	5 40			1 9

F INFECTIOUS SICKNESS, coming to the knowledge of the Medical
WESTBOURNE; classified according to DISEASES, AGES, and LOCALITIES.

[illegible]

WORTHING
URBAN SANITARY AUTHORITY.

pp. 121 et seq.

URBAN SANITARY DISTRICT OF WORTHING.

	1861.	1871.	1881.	1891.
Area in Statute Acres ..	584	584	979	1,425
Number of Inhabited Houses ..	1,051	1,331	1,959	3,015
„ Uninhabited „ ..	51	129	178	174
„ Building „ ..	7	11	82	39
Population	5,805	7,413	10,976	16,606
Males	2,497	3,174	4,701	6,878
Females	3,308	4,239	6,275	9,728

The area of this Urban Sanitary District was extended to include the civil parish of Heene, and the District was incorporated as a Municipal Borough by a charter dated 15th August, 1890.

The above figures, previous to 1891, only deal with the old Local Board District of Worthing.

Heene forms now the West Ward of the new Borough, and it is more commonly known as West Worthing; there was, however, a portion of Heene in the rural district of East Preston up to 1890, but now the whole parish is incorporated.

The Borough of Worthing is formed out of two parishes; it comprises part of Broadwater and the whole of Heene; the rest of Broadwater is in the rural district of East Preston.

	Part of Broadwater.	Heene.	Total.
Area in Statue Acres	999	426	1,425
Houses Inhabited	2,742	273	3,015
„ Uninhabited	132	42	174
„ Building	31	8	39
Population, 1891:—			
Males	6,300	578	6,878
Females	8,615	1,113	9,728
Persons	14,915	1,691	16,606
Persons in 1881	10,976	845	11,821

Worthing has thus increased its numbers by addition of area as well as by the growth of population.

The figures of these different areas at each census period are here shown :—

Year.		Total.		Worthing Urban.		West Worthing Urban.		Rural Heene.
1871	..	7,840	..	7,413	..	276	..	151
1881	..	11,821	..	10,976	..	689	..	156
1891	..	16,606	..	14,914	..	1,542	..	150

Thus it will be seen that Worthing Urban District increased by 3,563 between 1871 and 1881, but these figures include the addition of 600 persons by taking in a portion of rural Broadwater. The increase from 1881 to 1891 with no change of area, was 3,938. Rural Heene remained stationary, while in West Worthing district, or Urban Heene, the increase was very rapid, there being nearly six times as many people in 1891 as there were in 1871.

When, on September 3rd, 1890, Worthing became a municipal borough, the whole area was divided into five wards.

The mean number of persons in each house in each ward is here shown :—

		Houses.	Mean No. of Inmates. per House.
1.	East Ward	510	5·4
2.	Central Ward	1,091	5·7
3.	North-east Ward ..	566	5·6
4.	North-west Ward ..	575	5·0
5.	West Ward	273	6·1
Total		3,015	5·4

The West Ward is the least over-crowded of all, as the houses are on the average much larger than in the rest of the district, and a large number of servants are kept; there are also two schools which increase the average in each house.

The following figures show the number of houses and the number of inhabitants at the census of 1891. The excess of females is well marked, and doubtless this is owing to the number of schools, lodging houses, and private residences, where several female servants are kept. There is, in this district, a vast excess of unmarried females, and thus the birth-rate is low.

No.	Ward.	Inhabited Houses.	Male.	Female.	Total.
1.	East	510	1,171	1,621	2,792
2.	Central	1,091	2,572	3,697	6,269
3.	North-east ..	566	1,283	1,653	2,936
4.	North-west ..	575	1,270	1,647	2,917
5.	West	273	578	1,114	1,692
Total		3,015	6,874	9,732	16,606

These figures are taken from the corrected census returns ; they differ slightly from those give in the last annual report.

BIRTHS AND BIRTH-RATE.

During the year 1893 the births of 373 children were registered; of these 185 were male, and 188 were female.

Estimating the population in the middle of the year at 17,400 the birth-rate was equal to 21·4 per 1,000 persons living, against a rate of 23·4 in 1891, and 22·4 in 1892.

The rate varies very much in each Ward, and it depends upon the distribution of married women living at the child-bearing ages. For this reason the rate is low in the West Ward, and high in the North-east and North-west Wards.

In each Ward the births and birth-rate for the past three years are here shown :—

No.	Ward.	Male.	Births.		Total.		Birth-rate per 1,000.		
			Female.				1893.	1892.	1891.
1.	East	37	32	69	..		23·5	21·6	24·7
2.	Central	55	64	119	..		19·0	20·3	21·2
3.	North-east ..	42	35	77	..		25·7	26·9	32·0
4.	North-west ..	41	47	88	..		28·5	30·7	26·1
5.	West	10	10	20	..		9·5	9·4	11·8
Total		185	188	373	..		21·4	22·4	23·4

The general birth-rate is low, and it has been steadily declining for the last ten years.

In England and Wales the birth-rate during the year was 30·8 per 1,000 persons living, a rate 1·1 per 1,000 below the mean rate in the ten years, 1883—92.

It is of interest to compare the variations in the birth-rate during the last ten years under the Local Board, bearing in mind that the addition of the West Ward has slightly helped to lower the rate.

Year.		Births.		Birth-rate.	Year.		Births.		Birth-rate.
1881	..	324	..	29·2	1886	..	366	..	27·7
1882	..	355	..	30·7	1887	..	327	..	24·5
1883	..	313	..	25·7	1888	..	322	..	23·3
1884	..	352	..	27·8	1889	..	362	..	25·6
1885	..	327	..	25·0	1890	..	338	..	23·1

GENERAL MORTALITY.

There were 427 deaths registered in this district during the year 1893, but to this number must be added the deaths of five persons

belonging to this district in East Preston Workhouse, which is outside the area. From this total number of 432 there must be deducted the deaths of six persons in the Worthing Infirmary, who came from outside the district, leaving a total of 426 deaths.

This number includes the deaths of 25 persons who are reckoned as visitors.

Estimating the population in the middle of the year at 17,400, the death-rate was equal to 24·5 per 1,000 persons living ; excluding visitors, the rate was equal to 23·0 per 1,000.

The variations in the death-rate in the Local Board District during the ten years previous to 1891 have been as follows :—

Year.	Deaths.		Deaths.	
	Including Visitors.	Excluding Visitors.	Including Visitors.	Excluding Visitors.
1881.....	170	150	15·3	13·5
1882.....	160	142	13·8	12·3
1883.....	164	151	13·4	12·4
1884.....	205	177	16·2	14·0
1885.....	178	161	13·6	12·3
1886.....	228	210	17·2	15·9
1887.....	231	206	17·3	15·4
1888.....	220	187	15·9	13·5
1889.....	179	145	12·6	10·2
1890.....	218	181	14·9	12·3

The following table shows the deaths and death-rate estimated on a population in the middle of the year of 17,400 ; it includes the deaths of all visitors and the 5 workhouse deaths.

DEATHS.

No.	Ward.	Deaths.			Death-rate per 1,000.		
		1891.	1892.	1893	1891.	1892.	1893.
1.	East	52	28	76	18·6	9·6	26·2
2.	Central	136	103	139	21·7	16·3	22·1
3.	North-east ..	72	42	76	24·5	13·8	25·3
4.	North-west ..	56	49	94	19·2	15·6	30·4
5.	West	25	26	41	14·8	14·4	19·5
Total		341	248	426	20·3	14·4	24·5

The mortality in each quarter of the past three years is here shown :—

	Male.	Female.	Total.	Total.	Total.
			1890.	1891.	1892.
First Quarter ..	37	36	73	107	86
Second Quarter ..	49	63	112	74	50
Third Quarter ..	81	100	181	56	54
Fourth Quarter ..	20	40	60	104	58
Total	187	239	426	341	248

The deaths in each quarter at various groups of years are here shown :—

		Under 1 year.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and over.	Total.
First Quarter	..	5	5	1	4	31	27	73
Second Quarter	..	20	12	13	21	30	16	112
Third Quarter	..	21	13	28	43	59	17	181
Fourth Quarter	..	8	2	2	5	21	22	60
Total ..	..	54	32	44	73	141	82	426

INFANT MORTALITY.

The *infant mortality* is here given as measured by the number of deaths under one year of age to the total number of births in the year :—

No.	Ward.		Births.	Deaths under one year.	Ratio to 1,000 Births.	Ratio in 1891.	Ratio in 1892.
1.	East	..	69	11	159	87	32
2.	Central	..	119	10	84	127	109
3.	North-east	..	77	11	143	170	49
4.	North-west	..	88	20	227	158	95
5.	West	..	20	2	100	200	59
Total	..	..	373	54	145	140	78

The rate of infant mortality in the local Board District for the previous ten years was in

Year.	Ratio.	Year.	Ratio
1881	86	1886	147
1882	95	1887	100
1883	105	1888	93
1884	122	1889	77
1885	88	1890	136

Giving a mean ratio for that decade of 105 deaths to 1,000 births.

The 54 *infantile* deaths included five from whooping cough, twelve from diarrhœa, two from enteric fever, one from erysipelas, one from tabes mesenterica, three from tuberculosis, three from convulsions, four from bronchitis, four from pneumonia, three from gastritis, two from enteritis, five from debility, two from marasmus, and one from malformation ; six infants were born prematurely.

In England and Wales the proportion of deaths under one year of age to registered births was 159 per 1,000 during the past year, the mean proportion in the preceeding ten years having been 144.

ZYMOTIC MORTALITY.

The deaths from zymotic diseases were 178 in the case of those which are notifiable, and 27 in the other class where the number of cases cannot be obtained, or a total of 205 deaths in all, with a zymotic mortality of 11·8 per 1,000.

					Cases.	Deaths.
Fevers.	Small-pox	..	..	..	none	none
	Scarlatina	..	..	..	48	1
	Diphtheria	..	..	..	5	3
	Membranous Croup	..	..	..	none	none
	Typhus	..	..	..	none	none
	Enteric	..	..	..	1,320	172
	Continued	..	..	..	none	none
	Relapsing	..	..	..	none	none
	Puerperal	..	..	..	3	none
	Cholera	..	..	..	none	none
	Erysipelas	..	..	..	15	2
Total					1,391	178

In the other class the deaths were as follows:—

					Deaths.
Measles	..	..	..	..	1
Whooping Cough	..	..	..	..	7
Diarrhœa and Dysentery	..	..	..	..	18
Rheumatic Fever	..	..	..	..	1
Total					27

There were also two deaths from influenza in the first quarter of the year.

The Infectious Disease (Notification) Act, 1889, came into force on August 3rd, 1890. There is no Isolation Hospital in the district.

The Infectious Disease (Prevention) Act, 1890, came into operation on July 4th, 1891.

The Public Healths Acts Amendment Act, 1891, came into operation on July 4th, 1891.

The prevalence in each quarter of each notifiable disease is shown in the following table:—

		1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
Scarlatina	.. ..	21	14	9	4	48
Diphtheria	.. ..	1	—	2	2	5
Enteric Fever	.. ..	1	303	983	33	1,320
Puerperal Fever	.. ..	2	1	—	—	3
Erysipelas	.. ..	11	2	2	—	15
Total..		36	320	996	39	1,391

An account of the outbreak of Enteric Fever in Worthing, Broadwater, and West Tarring will be found at the end of this volume. It is placed there because it will be issued as a separate report hereafter.

AGES OF PERSONS LIVING IN 1891.

The number of persons living at different groups of ages is here shown, as taken from the Census returns of 1891. It differs from a rural population in the great excess of females over males, and in the increased numbers living in adult life :—

		Male.		Female.		Total.
Under 5 years	..	892	..	813	..	1,705
5 to 10	..	932	..	902	..	1,834
10 „ 15	..	973	..	988	..	1,961
15 „ 20	..	663	..	1,058	..	1,721
20 „ 25	..	489	..	1,043	..	1,532
25 „ 35	..	884	..	1,521	..	2,405
35 „ 45	..	734	..	1,186	..	1,920
45 „ 55	..	581	..	929	..	1,510
55 „ 65	..	350	..	651	..	1,001
65 „ 75	..	261	..	425	..	686
75 „ 85	..	108	..	184	..	292
85 „ 95	..	11	..	27	..	38
95 „ 100	..	—	..	—	..	—
100 and over	..	—	..	1	..	1
Total		6,878		9,733		16,606

SYSTEMATIC INSPECTION.

The following is the report of Mr. C. T. Gardner, the Sanitary Inspector, for the year 1893.

I beg to submit my third annual report showing the work carried out in my department during the year ending December 31st, 1893.

The undermentioned premises were visited with results as stated in each case :—

SLAUGHTER HOUSES.—These are seven in number, which were periodically visited and found generally clean, the requirements of the by-laws as to limewashing being carried out.

In one case a foul dung pit, defectively paved pig sties, and two foul cesspools receiving garbage were found. A notice served on the owner resulted in the abolition of the cesspools, the provision of an intercepting chamber, and in the amendment of the defects existing in the dung pit and pigsties.

In three instances cesspits receiving blood of slaughtered animals, and overflowing into the sewers, were abolished, proper dip holes from which the blood can be baled into receptacles being provided.

BAKEHOUSES.—These were periodically visited, and, with a few exceptions, found to be clean and well kept, and limewashed as required twice during the year.

In the case of an application as to the reopening of No. 15a, Montague Street for use as a bakehouse, on the matter being referred to the Medical Officer of Health, he was of opinion that the requirements of the Factory and Workshops Acts, 1883 and 1891, could not be complied with, and consequently the reopening was not sanctioned.

COMMON LODGING HOUSES.—In the early part of the year there were three of these in the Borough. During the prevalence of the epidemic of Enteric fever one was taken and used as a hospital, and since its discontinuance for that purpose it has remained closed. The other two are found to be kept clean and in good condition.

The influx of workmen into the Borough, in connection with the sewerage works, will necessitate stricter supervision with regard to the number of lodgers received into these houses.

DAIRIES AND MILKSHOPS.—The regulations in force in the Borough are observed.

COWSHEDS.—These are five in number, and do not, in three instances, meet the requirements of the by-laws.

BUTCHERS SHOPS AND FISH SHOPS were found clean.

MEAT INSPECTION.—The various shops, slaughter-houses, and Railway Station have been frequently visited to ascertain whether any meat was exposed for sale, or in course of preparation for sale as human food, which was unfit for that purpose, and it is gratifying to be able to state that none such was found.

In one instance the proprietor of a foreign meat depot drew my attention to the carcase of a sheep, which, being in my opinion unfit for human food, I condemned and destroyed. As the carcase had not been exposed for sale, no legal proceedings were necessary.

FOOD INSPECTION.—The various general, grocers, provision, fruit, and greengrocers shops and corn stores were visited. In one case a shopkeeper was cautioned with respect to damaged fruit, which was, however, hardly bad enough to call for condemnation and seizure, but was destroyed in my presence.

No samples of canned food were purchased.

MARGARINE ACT.—Special attention has been directed to the carrying out of this Act, and in two instances persons were cautioned for neglecting to comply with the requirements with regard to the exposure of proper labels.

SALE OF FOOD AND DRUGS ACT.—No samples of food or drugs were purchased for analysis, no instructions having been given by your Committee. I would point out that this Act is practically a dead letter in the Borough, as reference to the analyst's report will shew.

COMPLAINTS.—Seventeen complaints were received and promptly investigated. Where requisite a notice was served, and nuisance abated.

Several of these arose in connection with seaweed used for horticultural, &c., purposes in the West Ward. The occupiers of the land were visited, and asked to do this kind of work as much as possible while an easterly wind prevailed, and to work weed into the ground as quickly as possible, which they seemed anxious to do.

INFECTIOUS DISEASE.—1,361 cases of infectious disease were inquired into. Of these 1,316 were Enteric or Typhoid Fever, the remainder being Scarlet Fever, Erysipelas, and Diphtheria. Disinfectants were freely supplied in each case up to the end of August, and after that date to the hospitals only.

During the Enteric Fever Epidemic, a staff of men were employed in flushing drains of houses, where cases of fever existed, daily, and the fumigation of infected rooms was carried out wherever possible, more especially where overcrowding existed, or the rooms were dirty. In 22 cases the certificate of the Medical Officer of Health was necessary to enable a notice to be served for the carrying out of the work.

NOTICES SERVED.—1,353 notices for the abatement of nuisances and remedying of sanitary defects were served as enumerated below :—

Animals so kept as to be a nuisance	..	..	5
Bedding to destroy	..	..	1
Cesspools, foul and overflowing	..	..	3
Disinfect premises	..	..	22
Dung pit, repair or provide new	..	..	3
Drains, repair or amend	..	..	159
Ditto, ventilate	..	..	171
Dung, accumulations of	..	..	8
Dust bin, repair or provide new	..	..	176
Drains, amend defective inlets to	..	..	21
Gipsies, causing nuisance	..	..	5
Overcrowding, to abate	..	..	2
Pond, foul	..	..	1
Pipes, rain water, &c., connected with drain	..	..	89
Ditto, rain water to amend	..	..	16
Ditto, sink waste, ditto	..	..	37
Paving, yard to amend	..	..	68
Soil pipes, to ventilate	..	..	34
W.c.'s, provide light and ventilation to	..	..	4
W.c.'s, repair or amend	..	..	243
W.c.'s, provide separate water supply	..	..	222
Water, accumulations of	..	..	3
Water fittings to repair	..	..	60

Fifty-seven SAMPLES OF WATER, taken as follows:—

Date 1893.	Where taken.	Analyst.	Analysis.	No. of Samples.
May 6	No. 3 Well (Corporation)	Dr. Dupre	Chemical	3
" 12	Local Wells (West Ward)	Dr. Kelly	"	1
" 15	No. 3 Well (Corporation)	Dr. Crookshank	Bacteriological	2
" 22	Reservoir	"	"	3
" 22	"	"	"	1
June 5	"	"	"	2
" 20	"	Dr. Thompson	Chemical	1
July 20	Chesswood Road (Local Well)	Dr. Dupre	"	1
" 27	No. 3 Well	for Local Government Board	Bacteriological	1
August 5	No. 3 Well	"	Chemical	8
" 17	West Ward Mains	Dr. Klein	Bacteriological	1
" 21	" Well	"	"	1
" 27	Town Works	"	"	11
Nov. 27	Town Services	"	"	12
" 29	"	"	"	1
" 30	Temporary Supply, Broadwater	"	"	1
Dec. 1	Town Service	Mr. Cripps	"	4
" 7	Worthing Mains	Dr. Klein	"	3
" "	West Ward Mains	"	"	1

WATER INSPECTION.—I am pleased to state that the number of w.c.'s supplied direct from stool valves is rapidly diminishing.

I would also point out that since the incorporation of the town no regulations re-water supply and fittings have been issued, the few copies in existence being dated so far back as 1883.

In addition to the above, numerous samples of water have been taken from the mains at various times for the Medical Officer of Health.

FACTORY AND WORKSHOP ACT, 1891.—The sanitary fittings and drains of six factories have been put in good condition. No list of out workers have been obtained owing to pressure of work in other directions.

A house to house inspection of the Borough was commenced in October, and is still in progress. The order for various books required in this inspection has been given by your Committee, but I am yet in conference with the Town Clerk as to the special form in which they are to be drawn up.

I would draw your attention to the need of a public abattoir to replace the existing slaughter houses, which are a source of frequent complaint, although well kept.

The public elementary schools have also been visited and found to be much improved from a sanitary point of view. No proceedings have been taken before the magistrates.

INQUESTS were held in twelve cases:—Male, 84 years, accidental injury to hand; male, 48 years, suicide by cutting throat; female, 47 years, accidental fall; male, 62 years, suicide by strangling; male, 32 years, failure of heart's action caused by vomiting and diarrhœa brought on by eating unsound food; female, 61 years, embolism of the pulmonary artery; male, 15 years, accidentally drowned; female, 39 years, accidental fall; female, 48 years, accidental injury to foot; male, 5 years, accidentally knocked down by a horse; male, 59 years, accidentally suffocated; male, 4 months, debility and improper feeding.

There were two deaths returned as "not certified":—Female, 66 years, heart disease; male, 67 years, heart disease.

WORTHING URBAN SANITARY DISTRICT.

TABLE 1.—Showing the Deaths at various groups of ages in the ten years, 1884-93.

Year.	At all Ages.	Under 1 Year.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and upwards.
1884	205	43	13	12	6	71	60
1885	178	29	20	7	8	55	59
1886	228	54	43	10	5	63	53
1887	231	33	18	13	16	74	77
1888	220	30	28	10	6	76	70
1889	179	28	15	7	10	63	56
1890	218	46	18	4	18	63	69
1891	341	55	44	16	9	114	103
1892	248	30	14	7	24	86	87
1893	426	54	32	44	73	141	82
Total...	2,474	402	245	130	175	806	716

TABLE 2.—Showing the Deaths in the eighteen years, 1876-93 from various causes.

Year.	Small-pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Fevers.					Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhoea.	Rheumatic Fever.	Influenza.	Total.
					Typhus.	Enteric.	Continued.	Relapsing.	Puerperal.								
1876-80* ...	—	19	7	—	—	7	1	—	3	—	1	13	25	28	2	—	106
1881-85* ...	—	7	8	—	—	9	—	—	1	—	2	13	8	21	5	—	74
1886-90* ...	—	8	11	—	—	6	—	—	—	—	3	7	46	22	2	—	105
1891† ...	—	1	—	—	—	—	—	—	1	—	2	40	5	4	—	9	62
1892† ...	—	1	3	—	—	3	—	—	—	—	3	1	—	3	—	15	29
1893† ...	—	1	3	—	—	17	2	—	—	—	2	1	7	18	1	2	207
Total...	—	37	32	—	—	197	1	—	5	—	13	75	91	96	10	26	583

* Local Board.

† Municipal Borough.

(A)—Table of DEATHS during the Year 1893, in the Urban Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities. (a)	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.							(i)	1	2	3
	At all ages. (b)	Under 1 year. (c)	1 and under 5. (d)	5 and under 15. (e)	15 and under 25. (f)	25 and under 65. (g)	65 and upwards. (h)		Small Pox. (j)	Scarlatina. (k)	Diphtheria. (l)
East Ward	72	11	7	11	7	19	17	Under 5 5 upwards.		1	
Central Ward	127	10	10	15	22	44	26	Under 5 5 upwards.			2
North-east Ward	75	11	5	5	15	24	15	Under 5 5 upwards.			
North-west Ward...	91	20	8	8	17	27	11	Under 5 5 upwards.			
West Ward	41	2	2	2	6	20	9	Under 5 5 upwards.			1
Worthing Infirmary.....	21	—	1	3	8	8	1	Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
TOTALS.....	427	54	33	44	75	142	79	Under 5 5 upwards.		1	2
The subjoined numbers have also to be taken into											
Deaths occurring outside the District among persons belonging thereto.....	5	—	—	—	1	1	3	Under 5 5 upwards.			
Deaths occurring within the District among persons not belonging thereto...	31	2	1	1	5	13	9	Under 5 5 upwards.			

of WORTHING, classified according to Diseases, Ages, and Localities.

MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN
UNDER FIVE YEARS OF AGE.

4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Membranous Croup.	FEVERS.					Cholera.	Erysipelus.	Measles.	Whooping Cough.	Diarrhoea and Dysentery.	Rheumatic Fever.	Ague.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease.	Injuries.	All Other Diseases.	TOTAL.
	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.													
		4							1	3				2			8	18
		24											1	3	5	1	19	54
		3							2	3				4			8	20
		48					1				1		11	6	3	1	34	107
		1						1	3	2				2			7	16
		23								1			5	3	5	2	20	59
		1					1		1	9				6			10	28
		42											3	2	4	2	10	63
																	3	4
		15											4	2	3	1	12	37
																1	—	1
		11												2		4	3	20
		9					1	1	7	17				14		1	36	87
		163					1			1	1		24	18	20	11	98	340

account in judging of the above records of mortality.

																	—	—
													1		2		2	5
										1						1	1	3
		6											3	3		5	11	28

(B)—TABLE OF POPULATION, BIRTHS, AND OF NEW CASES

Officer of Health, during the year 1893, in the Urban Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	POPULATION AT ALL AGES.		Registered Births.	Aged under 5 or over 5.	NEW CASES OF SICK- COMING TO THE KNOWLEDGE OF					
	Census 1891.	Esti- mated to mid- dle of 1893.			1	2	3	4	5	6
					Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus.	Enteric or Typhoid.
(a.)	(b.)	(c.)	(d.)	(e.)						
East Ward.....	2,767	2,900	69	Under 5		2				16
				5 upwards.		7	1			234
Central Ward	6,269	6,280	119	Under 5		3				28
				5 upwards.		13	3			425
North-east Ward	2,936	3,000	77	Under 5		2				8
				5 upwards.		7				186
North-west Ward	2,917	3,090	88	Under 5		3				25
				5 upwards.		9				340
West Ward	1,692	2,100	20	Under 5			1			4
				5 upwards.		2				54
Worthing Infirmary	25	30		Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
TOTALS	16,606	17,400	373	Under 5		10	1			81
				5 upwards.		38	4			1239

LITTLEHAMPTON
URBAN SANITARY AUTHORITY.

pp. 139 et seq.

URBAN SANITARY DISTRICT OF LITTLEHAMPTON.

	1861.	1871.	1881.	1891.
Area in Statute Acres ..	925	925	925	925
Number of Inhabited Houses .	497	624	743	851
„ Uninhabited „ ..	36	52	46	73
„ Building „ ..	3	4	17	15
Population	2,350	3,266	3,926	4,452
Males	1,112	1,569	1,865	1,962
Females	1,238	1,697	2,061	2,490

BIRTHS AND BIRTH-RATE.

During the year 1893 the births of 105 children were registered ; of these 52 were male, and 53 were female.

Estimating the population in the middle of the year at 4,550 the birth-rate was equal to 23·1 per 1,000 persons living.

The variations in the birth-rate during the past ten years have been as follows :

Year.	Births.	Birth-rate.	Year.	Births.	Birth-rate.
1884 ..	98 ..	24·5	1889 ..	104 ..	24·4
1885 ..	81 ..	19·7	1890 ..	89 ..	20·7
1886 ..	89 ..	21·4	1891 ..	93 ..	20·8
1887 ..	116 ..	27·7	1892 ..	81 ..	18·0
1888 ..	99 ..	23·5	1893 ..	105 ..	23·1

The mean annual number of births is 95, and the mean annual birth-rate is 22·4 per 1,000 persons living.

In England and Wales the birth-rate during the year was 30·8 per 1,000 persons living, a rate 1·1 per 1,000 below the mean rate in the ten years, 1883-92.

GENERAL MORTALITY.

There were 54 deaths registered in this district during the year 1893, but to this number must be added the deaths of three persons in the East Preston Workhouse, which is outside the district, making the total of 57 deaths; of these 23 were amongst males, and 34 amongst females.

These 57 deaths include the death of one visitor.

Estimating the population in the middle of the year at 4,550, the death-rate was equal to 12·5 per 1,000 persons living.

In country places throughout England and Wales the rate of mortality in 1893 was equal to 17·4 per 1,000 of population.

The mean annual number of deaths during the last ten years was 56, and the mean annual death-rate is 13·0 per 1,000 persons living.

The variations in the death-rate during the past ten years have been as follows :—

Year.	Deaths.		Deaths.	
	Including Visitors.	Excluding Visitors.	Including Visitors.	Excluding Visitors.
1884.....	44	41	11·0	10·2
1885.....	47	46	11·4	11·2
1886.....	50	48	12·0	11·5
1887.....	59	51	14·1	12·2
1888.....	58	55	13·8	13·1
1889.....	65	59	15·3	13·9
1890.....	38	37	8·8	8·6
1891.....	84	79	18·8	17·7
1892.....	59	56	13·1	12·4
1893.....	57	56	12·5	12·3

In each quarter of the past five years the deaths were thus registered :—

	1889.	1890.	1891.	1892.	1893.	Total.
First Quarter ..	14	11	22	17	20	84
Second Quarter ..	15	7	25	17	12	76
Third Quarter ..	26	9	15	10	16	76
Fourth Quarter ..	10	11	22	15	9	67
Total ..	65	38	84	59	57	303

INFANT MORTALITY.

The *infant mortality* is here given as measured by the number of deaths under one year of age to the total number of the births in the year :—

Year.	Births.	Deaths under one year.			Ratio to 1,000 Births.
1884	98	..	3	..	30
1885	81	..	4	..	49
1886	89	..	10	..	112
1887	116	..	8	..	69
1888	99	..	10	..	101
1889	104	..	6	..	58
1890	89	..	4	..	45
1891	93	..	10	..	107
1892	81	..	8	..	99
1893	105	..	5	..	48
Mean . .	95		6·8		71

The five *infantile* deaths included two from diarrhœa and one from enteritis ; two infants were born prematurely.

In England and Wales the proportion of deaths under one year of age to registered births was 159 per 1,000 during the past year, the mean proportion in the preceeding ten years having been 144.

ZYMOTIC MORTALITY.

There was one death from zymotic disease in the case of those which are notifiable, and 2 in the other class where the number of cases cannot be obtained. The zymotic mortality was at the rate of 0·7 per 1,000.

					Cases.	Deaths.
Fevers.	Small-pox	..	..	..	none	none
	Scarlatina	..	..	..	21	none
	Diphtheria	..	..	..	none	none
	Membranous Croup..	..	..	..	none	none
	Typhus	..	..	..	none	none
	Enteric	..	..	..	13	1
	Continued	..	..	..	none	none
	Relapsing	..	..	..	none	none
	Puerperal	..	..	..	none	none
	Cholera	..	..	..	none	none
	Erysipelas	..	..	..	9	none
Total					43	1

In the other class the deaths were as follows :—

				Deaths.
Measles	..	..	..	none
Whooping Cough	..	..	..	none
Diarrhœa and Dysentery	..	..	..	2
Rheumatic Fever	..	..	..	none
Total				2

There is no Isolation Hospital in this district.

The Infectious Disease (Notification) Act, 1889, came into operation on March 25th, 1890.

The Infectious Disease (Prevention) Act, 1890, came into operation on March 25th, 1891.

The Public Healths Acts Amendment Act, 1871, came into operation on March 25th, 1891.

The prevalence in each quarter of each notifiable disease is shown in the following table:—

	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
Scarlatina	3	7	10	1	21
Diphtheria	—	—	—	—	—
Enteric Fever	5	—	7	1	13
Erysipelas	1	—	5	3	9
Total..	9	7	22	5	43

ENTERIC FEVER caused one death in thirteen cases. There were five cases in one house in the early part of the year, and the cause was probably due to sanitary defects in the house which have since been remedied.

Most of the other cases were amongst persons who imported the disease into the district from Worthing during the summer, but there was no spread of the fever to other houses. Care was taken to prevent any infected excreta from entering the drains.

SCARLATINA was on a few occasions imported by visitors from London and elsewhere, who fell ill a day or two after their arrival. The cases were of a mild character and there was no fatal result.

Isolation was carried out and the rooms were cleansed and fumigated after recovery had taken place.

WATER SUPPLY.

This remains in precisely the same condition as detailed in the previous reports for the years 1879, 1888, and 1890.

DRAINAGE AND SEWAGE.

There has been no alteration in the general arrangement of the system of sewerage, and the drains are in the same condition as described in the annual report for 1888.

SCAVENGING AND CLEANSING.

The work is well done and the streets are kept very clean and well watered. The health of the town, as usual, was in a very satisfactory condition during the year.

AGES OF PERSONS LIVING IN 1891.

The following table shews the difference of an urban from a rural population in the excess of males over females, and in the increased number of persons living in early adult life :—

		Male.		Female.		Total.
Under 5 years	..	202	..	243	..	445
5 to 10	..	250	..	253	..	503
10 „ 15	..	259	..	271	..	530
15 „ 20	..	213	..	274	..	487
20 „ 25	..	150	..	255	..	405
25 „ 35	..	257	..	338	..	595
35 „ 45	..	205	..	280	..	485
45 „ 55	..	194	..	257	..	451
55 „ 65	..	142	..	153	..	295
65 „ 75	..	66	..	103	..	169
75 „ 85	..	22	..	50	..	72
85 „ 95	..	2	..	12	..	14
95 „ 100	..	—	..	1	..	1
Total	..	1,962		2,490		4,452

SYSTEMATIC INSPECTION.

Number of house inspections	..	..	..	295
Nuisances remedied	..	..	..	41

The number of Slaughter Houses, Bakehouses, Common Lodging Houses, and Cowsheds remains the same, and they are periodically inspected and found generally in a well kept state. The town water is laid on to all these premises.

The main sewers are flushed at frequent intervals, at the top ends of the systems, by means of flushing chambers of capacities varying from 700 to 1,000 gallons, and with sea water from the river at three stations. Extra flushing stations are being provided.

The hydrants (screw-down pattern) on main water supply distributing system are frequently opened out and the water run off, particularly at “dead” ends.

During the long drought of 1893 no diminution of water supply was felt, a constant pressure being maintained throughout.

The advantages of watering the roads with sea water in the hot weather was especially noticeable.

By-laws are provided for bathing machines.

By-laws are provided for hackney carriages.

By-laws are provided for common lodging houses.

By-laws are provided for slaughter houses.

Regulations for registering and inspecting Cowsheds and Dairies have been in force since September 1st, 1887.

The seven COWSHEDS and DAIRIES have been well kept.

There is but a small demand for MARGARINE, but when sold the regulations of the Act have been complied with.

The seven BAKEHOUSES have been frequently inspected ; they are kept clean and limewashed at intervals.

The three COMMON LODGING HOUSES have been inspected frequently, and they have been well kept.

The three SLAUGHTER HOUSES have been kept in a satisfactory condition.

There were no cases of overcrowding abated during the year.

No PROCEEDINGS were taken before the Magistrates during the year.

INQUESTS were held in 2 cases :—Female, 81 years, accidental fall ; male, 7 months, convulsions.

One death was returned as “ not certified ” out of a total of 59 deaths :—Male, 48 years, lung disease.

LITTLEHAMPTON URBAN SANITARY DISTRICT.

TABLE 1.—Showing the Deaths at various groups of ages in the ten years, 1884-93.

Year.	At all Ages.	Under 1 Year.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and upwards.
1884	44	3	—	2	5	17	17
1885	47	4	7	1	2	20	13
1886	50	10	7	2	1	12	18
1887	59	8	3	2	5	18	23
1888	58	10	7	3	3	16	19
1889	65	6	6	3	3	18	29
1890	38	4	2	1	5	14	12
1891	84	10	11	5	2	22	34
1892	59	9	4	4	2	20	20
1893	57	5	3	4	6	16	23
Total...	561	69	50	27	34	173	208

LITTLEHAMPTON RURAL SANITARY DISTRICT.

TABLE 2.—Showing the Deaths in the eighteen years, 1876-93, from various causes.

Year.	Small-pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Fevers.					Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhoea.	Rheumatic Fever.	Influenza.	Total.
					Typhus.	Enteric.	Continued.	Relapsing.	Puerperal.								
1876-80 ...	—	7	3	—	—	—	—	—	1	—	1	2	1	5	1	—	21
1881-85 ...	—	—	1	—	—	1	3	—	—	—	2	4	4	4	—	—	19
1886-90 ...	1	—	1	—	—	—	—	—	—	—	1	4	8	7	1	1	24
1891 ...	—	—	—	—	—	—	—	—	—	—	—	—	6	—	—	—	6
1892 ...	—	—	—	—	—	—	—	—	—	—	—	2	1	2	1	—	6
1893 ...	—	—	—	—	—	1	—	—	—	—	—	—	—	2	—	—	3
Total...	1	7	5	—	—	2	3	—	1	—	4	12	20	20	3	1	79

(A)—Table of DEATHS during the Year 1893, in the Urban Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities. (a)	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.							(i)	1	2	3
	At all ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and up-wards.		Small Pox.	Scarlatina.	Diphtheria.
	(b)	(c)	(d)	(e)	(f)	(g)	(h)				
Littlehampton Urban Sanitary District	54	5	3	4	6	15	21	Under 5			
								5 upwards.			
								Under 5			
								5 upwards.			
								Under 5			
								5 upwards.			
								Under 5			
								5 upwards.			
								Under 5			
								5 upwards.			
								Under 5			
								5 upwards.			
								Under 5			
								5 upwards.			
TOTALS.....	54	5	3	4	6	15	21	Under 5			
								5 upwards.			
The subjoined numbers have also to be taken into											
Deaths occurring outside the District among persons belonging thereto.....	3	—	—	—	—	1	2	Under 5			
								5 upwards.			
Deaths occurring within the District among persons not belonging thereto...	1	—	—	—	—	—	1	Under 5			
								5 upwards.			

of LITTLEHAMPTON, classified according to Diseases, Ages, and Localities.

MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN
UNDER FIVE YEARS OF AGE.

[illegible]

account in judging of the above records of mortality.

[illegible]

(B)—TABLE OF POPULATION, BIRTHS, AND OF NEW CASES

Officer of Health, during the year 1893, in the Urban Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	POPULATION AT ALL AGES.		Registered Births.	Aged under 5 or over 5.	NEW CASES OF SICK- COMING TO THE KNOWLEDGE OF					
	Census 1891.	Esti- mated to mid- dle of 1893.			1	2	3	4	5	6
					Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	FEVERS.	
									Typhus.	Enteric or Typhoid.
(a.)	(b.)	(c.)	(d.)	(e.)						
Littlehampton Urban Sani- tary District	4,452	4,550	105	Under 5		5				
				5 upwards.		16				13
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
TOTALS	4,452	4,550	105	Under 5		5				
				5 upwards.		16				13

OF INFECTIOUS SICKNESS, coming to the knowledge of the Medical
of LITTLEHAMPTON; classified according to DISEASES, AGES, and LOCALITIES.

[illegible]

ARUNDEL
URBAN SANITARY AUTHORITY.

pp. 153 et seq.

URBAN SANITARY DISTRICT OF ARUNDEL.

	1861.	1871.	1881.	1891.
Area in Statute Acres ..	1,969	1,969	1,969	1,969
Number of Inhabited Houses .	528	546	552	550
„ Uninhabited „ .	23	14	5	20
„ Building „ ..	—	1	1	1
Population	2,498	2,956	2,748	2,644
Males	1,201	1,466	1,357	1,327
Females	1,297	1,490	1,391	1,317

BIRTHS AND BIRTH-RATE.

During the year 1893 the births of 78 children were registered; of these 43 were male, and 35 were female.

Estimating the population in the middle of the year at 2,640 the birth-rate was equal to 29·5 per 1,000 persons living.

The variations in the birth-rate during the past ten years have been as follows :

Year.	Births.	Birth-rate.	Year.	Births.	Birth-rate.
1884 ..	70 ..	25·4	1889 ..	62 ..	23·0
1885 ..	69 ..	25·1	1890 ..	79 ..	29·2
1886 ..	66 ..	23·1	1891 ..	59 ..	22·3
1887 ..	64 ..	23·2	1892 ..	69 ..	26·1
1888 ..	76 ..	28·1	1893 ..	78 ..	29·5

The mean annual number of births is 69, and the mean annual birth-rate is 25·5 per 1,000 persons living.

In England and Wales the birth-rate during the year was 30·8 per 1,000 persons living, a rate 1·1 per 1,000 below the mean rate in the ten years, 1883-92.

In each quarter of the past five years the births were thus registered :—

	1889.	1890.	1891.	1892.	1893.	Total.
First Quarter ..	17	27	8	16	24	92
Second Quarter ..	13	14	11	20	18	76
Third Quarter ..	16	21	22	15	18	92
Fourth Quarter ..	16	17	18	18	18	87
	—	—	—	—	—	—
Total ..	62	79	59	69	78	347

GENERAL MORTALITY.

There were 44 deaths registered in this district during the year 1893, but to this number must be added the deaths of two persons in the East Preston Workhouse, which is outside the district, so that the total number of deaths amounts to 46 ; of these 24 were male and 22 were female.

Estimating the population in the middle of the year at 2,640, the death rate was equal to 17·4 per 1,000 persons living.

In country places throughout England and Wales the rate of mortality in 1893 was equal to 17·4 per 1,000 of population.

The variations in the death-rate during the past ten years have been as follows :—

Year.	Deaths.	Death-rate.	Years.	Deaths.	Death-rate.
1884 ..	40	14·5	1889 ..	47	17·4
1885 ..	37	13·4	1890 ..	70	25·9
1886 ..	42	15·2	1891 ..	51	19·3
1887 ..	77	28·0	1892 ..	45	17·0
1888 ..	56	20·7	1893 ..	46	17·4

Thus there have been during the above period 511 deaths, and a mean annual mortality of 18·9 per 1,000 of population. During the same period there were 692 births, so that the natural increase of population by excess of births over deaths was 181 ; there has, however, been a *decrease* of 104, so that a considerable number must have left the district in the past decade.

INFANT MORTALITY.

The *infant mortality* is here given as measured by the number of deaths under one year of age to the total number of births in the year :—

Year.	Births.	Deaths under one year.		Ratio to 1,000 Births.
1884	70	..	9	128
1885	69	..	3	43
1886	66	..	6	96
1887	64	..	8	125
1888	76	..	1	13
1889	62	..	9	145
1890	79	..	18	228
1891	59	..	11	186
1892	69	..	4	58
1893	78	..	9	115
Mean . .	69		7.8	113

In England and Wales the proportion of deaths under one year of age to registered births was 159 per 1,000 during the past year, the mean proportion in the preceeding ten years having been 144.

ZYMOTIC MORTALITY

There were three deaths from zymotic disease in the case of those which are notifiable, and 2 in the other class where the number of cases cannot be obtained. The zymotic mortality was at the rate of 1.9 per 100.

					Cases.	Deaths.
Fever.	Small-pox	..	..	..	none	none
	Scarlatina	..	..	..	1	1
	Diphtheria	..	..	..	none	none
	Membranous Croup	..	..	..	none	none
	Typhus	..	..	..	none	none
	Enteric	..	..	..	2	2
	Continued	..	..	..	none	none
	Relapsing	..	..	..	none	none
	Puerperal	..	..	..	none	none
	Cholera	..	..	..	none	none
	Erysipelas	..	..	..	none	none
Total		..	..	..	3	3

In the other class the deaths were as follows :—

					Deaths
Measles	..	..	..	..	none
Whooping Cough	..	..	..	..	none
Diarrhoea and Dysentery	..	..	..	..	2
Rheumatic Fever	..	..	..	..	none
Total	..	..	..	..	2

There is no Isolation Hospital in this district ; the cottage which was temporarily used for that purpose in 1890 was pulled down early in the year 1891.

The Infectious Disease (Notification) Act, 1889, came into operation on May 13th, 1891.

The Infectious Disease (Prevention) Act, 1890, came into operation on March 16th, 1891.

The Public Health Acts Amendment Act, 1891, came into operation on March 16th, 1891.

The prevalence in each quarter of each notifiable disease is shown in the following table:—

	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
Scarlatina	5	—	12	11	28
Diphtheria	—	1	1	—	2
Enteric Fever	—	—	16	—	16
Erysipelas |.. ..	2	2	—	2	6
	—	—	—	—	—
Total..	7	3	29	13	52

ENTERIC FEVER broke out in a small group of old houses in Tarrant Street, during August and September.

The following persons occupied the cottages, and those who had the fever are marked with a *

Name.	Age	Name.	Age.	Name.	Age.
Thomas Clements		William Wilkins		Charles Chivess	
Wife		Wife		*Wife	
Thomas	24	Flora	7	*Arthur Cousins	28
*Frank	17	Ivy	5	*Henry French	27
*John	9	Ethel	3	Arthur Boyling	26
Joseph	6	*Robert Stanley	25		
*Charles Skinner	24	John Bailey	24		
*Charles Humphries	22	Charles Coleman	24		
William Paynter	30				

In each of these three houses there were three male adult lodgers besides the parents and the children.

Of the 22 inmates, 16 were male and 6 were female; 17 were adults and five were children under fifteen years of age. There was also a fourth cottage close to the above, occupied by Mrs. Penfold and Mrs. Hill, in which a girl named Emily Pearson, aged 13 years, had the fever.

The dates of attack varied considerably.

The first case was notified on August 9th, two more on August 15th, one on August 26th, three on September 2nd, and two on September 4th. The date of illness was put down as ten days or a fortnight before the date of notification.

The cause of this limited outbreak was due to an impure water supply. A shallow well, about 15 feet in depth, supplied all these houses; the water in the well rose and fell with the tidal river which was only a few yards distant; there was also a slaughter house within ten feet of the well. There was plenty of good water to be obtained at a public tap a few yards away, but the inmates probably preferred this water as it was a little nearer the dwellings. The well was covered over and there was only one pump in connection with it, this pump stood in an open yard at the back of the cottages.

The pump was closed on August 16th, and after that date no one drank of this impure water.

It was analysed by Mr. Moore, the Public Analyst, with the following result:—

Grains per gallon.		Hardness (Clarke's Scale).	Metallic Impurities.	Organic Matter.	Parts per million.	
Solids.	Chlorine.				Free Ammonia.	Albumenoid Ammonia.
25·6	3·0	17°	none	4·2	·096	·07

Colour in Tube: Yellow, faint. Microscopic: Animalculæ abundant.

A hard water.—Impure. Contains sufficient organic matter associated with abundant forms of animalculæ to render it necessary to have it boiled before drinking.

Temporary hospital accommodation was at once provided by the Duke of Norfolk. A large building, formerly used for Poor Law purposes, and lately used as a Reading Room, was placed at the disposal of the Sanitary Authority. A large room on the ground floor was turned into a male ward, and a similar room on the first floor was used as a female ward. There was already a good kitchen on the opposite side of the entrance, so that in two days, the whole place was cleansed, lime-washed, painted and fitted up as a hospital, all this work being done by Mr. Mostyn acting for the Duke of Norfolk.

On September 6th, six cases were admitted and two more on the following day, and afterwards one or two more were taken in.

The place answered the purpose admirably; three nurses were employed, two for day duty and one for night duty. All the excreta were removed from the wards at once and, after being mixed with dry earth, they were placed in pails or water-tight vessels. Three times a day these pails were removed in a cart to a lonely spot on the chalk downs about a mile from the town, and there they were mixed with freshly made lime. No infected excreta passed from the hospital into any of the town drains.

There was no instance of any one catching the disease in the hospital. The nursing was carried out under the direction of a Committee of Ladies in the town.

The outbreak ceased very soon after the well was closed, and this impure water was the only condition in common to all those who were attacked.

The cost of nursing and feeding the patients amounted to £74 3s. 6d. and a sum of £2 10s. was received from paying patients. As there were ten patients, the charge amounted to about £7 8s. each, but this would have been greatly exceeded if the hospital accommodation had not been provided free of cost. The building was occupied until the end of October. There was no death of any case in the hospital.

There were two deaths registered in the town from enteric fever, one of a young man who died before the hospital was opened, and one of a baby, eight months old.

One other case of fever was imported from Worthing in August, but she recovered and there was no other case at her home.

AGES OF PERSONS LIVING IN 1891.

The number of males and females is very nearly equal and there is an excess of aged persons in the population.

			Male.		Female.		Total.
Under 5 years	..		142	..	120	..	262
5 to 10	..		153	..	135	..	288
10 „ 15	..		143	..	136	..	279
15 „ 20	..		150	..	133	..	283
20 „ 25	..		116	..	105	..	221
25 „ 35	..		190	..	203	..	393
35 „ 45	..		144	..	155	..	299
45 „ 55	..		123	..	124	..	247
55 „ 65	..		85	..	107	..	192
65 „ 75	..		50	..	58	..	108
75 „ 85	..		25	..	37	..	62
85 „ 95	..		6	..	3	..	9
95 „ 100	..		—	..	1	..	1
Total			1,327		1,317		2,644

WATER SUPPLY.

An excellent supply of good water has now been given to the town free of cost by the Duke of Norfolk. The amount is limited to 75,000 gallons a day. The houses on each side of the river can now be supplied, and the water mains are extended to Crossbush and Tortington.

A chemical analysis of this water was made by Mr. Johnstone, with the result that in each case the water was of “first-class” quality.

Sample A was taken from a main in Tarrant Street, and sample B was taken from the well in the chalk near the Dairy.

		A		B
		Grains per gallon.		Grains per gallon.
Total solid Residue	..	20·30	..	21·00
Loss on Ignition	..	4·30	..	3·50
Chlorine..	..	1·70	..	1·70
Nitrates	..	Faint Traces.	..	Traces.
		Parts per million		Parts per million.
Ammonia Free	..	·0100	..	·0100
„ Albumenoid	..	·0400	..	·0500

DRAINAGE AND SEWAGE.

Nothing further was done in the course of the year, and the question of drainage is in the same position as detailed in my last Annual Report.

MARGARINE ACT.

Several grocers sell margarine, and in each case the regulations of the Act have been complied with.

BAKEHOUSES.

These are six in number and they are very well kept. There is no bakehouse on a large scale, and the chief duty is to see that they are frequently cleansed and limewashed. In each case there is a good amount of light and air, and in no instance is there any drain within the building.

SLAUGHTER HOUSES.

These are five in number, and they are very well kept as regards cleanliness and removal of refuse. One old one has been pulled down and a new one has been erected on another site in a more isolated position. The meat in all cases has seemed to be of very good quality.

COMMON LODGING HOUSES.

These are three in number, but the number of inmates is very small. The houses are very well kept.

No INQUESTS were held during the year, and no deaths were returned as “not certified.”

ARUNDEL URBAN SANITARY DISTRICT.

TABLE 1.—Showing the Deaths at various groups of ages in the ten years, 1884-93.

Year.	At all Ages.	Under 1 Year.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and upwards.
1884	40	9	5	3	2	12	9
1885	37	3	4	1	5	11	13
1886	42	6	3	3	4	16	10
1887	77	8	7	3	3	35	21
1888	56	1	13	6	4	16	16
1889	47	9	—	1	4	16	17
1890	70	18	8	3	6	20	15
1891	51	11	3	2	1	12	22
1892	45	4	3	2	3	13	20
1893	46	9	3	2	2	14	16
Total...	511	78	49	26	34	165	159

TABLE 2.—Showing the Deaths in the eleven years, 1876-93, from various causes.

Year.	Small-pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Fevers.					Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhoea.	Rheumatic Fever.	Influenza.	Total.
					Typhus.	Enteric.	Continued.	Relapsing.	Puerperal.								
1883	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1
1884	—	—	1	—	—	—	—	—	—	—	—	—	1	2	—	—	4
1885	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
1886-90	—	16	7	—	—	11	1	—	1	—	1	1	1	3	1	2	45
1891	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	1	3
1892	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	4
1893	—	1	—	—	—	2	—	—	—	—	—	—	—	2	—	3	8
Total..	—	17	8	—	—	13	1	—	1	—	1	2	3	9	1	10	66

ARUNDEL URBAN SANITARY DISTRICT.

TABLE 3.—Showing the Deaths and Death-rate from all causes and from various causes in the ten years, 1884-93.

YEAR.	Deaths during the ten years, 1884-93, from					Mean Annual Death-rate per 100,000 living from					
	Population in middle of period.	All Diseases.	Zymotic Disease.	Phthisis.	Lung Disease.	Heart Disease.	All Diseases.	Zymotic Disease.	Phthisis.	Lung Disease.	Heart Disease.
1884	2,750	40	4	8	7	5	1,454	145	291	254	182
1885	2,750	37	1	8	5	6	1,345	36	291	182	218
1886	2,750	42	4	5	9	5	1,527	145	182	327	182
1887	2,750	77	2	13	9	11	2,800	72	472	327	400
1888	2,700	56	17	7	5	4	2,074	618	254	181	145
1889	2,700	47	3	4	6	5	1,740	109	145	218	182
1890	2,700	70	17	3	8	7	2,592	618	109	291	254
1891	2,644	51	2	3	10	4	1,929	75	113	378	151
1892	2,640	45	—	5	4	11	1,704	—	190	151	416
1893	2,640	46	5	1	6	9	1,742	189	38	227	341

(A)—Table of DEATHS during the Year 1893, in the Urban Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities. (a)	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.								1	2	3
	At all ages. (b)	Under 1 year. (c)	1 and under 5. (d)	5 and under 15. (e)	15 and under 25. (f)	25 and under 65. (g)	65 and upwards. (h)		Small Pox. (i)	Scarlatina.	Diphtheria.
Arundel Urban Sanitary } District	44	9	3	2	2	14	14	Under 5 5 upwards.		1	.....
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
								Under 5 5 upwards.			
TOTALS.....	44	9	3	2	2	14	14	Under 5 5 upwards.		1	.....
The subjoined numbers have also to be taken into											
Deaths occurring outside the District among persons belonging thereto.....	2						2	Under 5 5 upwards.			
Deaths occurring within the District among persons not belonging thereto...								Under 5 5 upwards.			

of ARUNDEL, classified according to Diseases, Ages, and Localities.

MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN
UNDER FIVE YEARS OF AGE.

[illegible]

account in judging of the above records of mortality.

[illegible]

(B)—TABLE OF POPULATION, BIRTHS, AND OF NEW CASES

Officer of Health, during the year 1893, in the Urban Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	POPULATION AT ALL AGES.		Registered Births.	Aged under 5 or over 5.	NEW CASES OF SICK- COMING TO THE KNOWLEDGE OF					
	Census 1891.	Esti- mated to mid- dle of 1893.			1	2	3	4	5	6
					Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus.	Enteric or Typhoid.
(a.)	(b.)	(c.)	(d.)	(e.)						
Arundel Urban Sanitary } District	2,644	2,640	78	Under 5		9				2
				5 upwards.		19	2			14
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
				Under 5						
				5 upwards.						
TOTALS	2,644	2,640	78	Under 5		9				2
				5 upwards.		19	2			14

OF INFECTIOUS SICKNESS, coming to the knowledge of the Medical
of ARUNDEL; classified according to DISEASES, AGES, and LOCALITIES.

[illegible]

HORSHAM
URBAN SANITARY AUTHORITY.

pp. 167 et seq.

URBAN SANITARY DISTRICT OF HORSHAM.

				1881.	1891.
Area in Statute Acres	..	..		833	839
Number of Inhabited Houses	..			1,396	1,657
„ Uninhabited „	..	..		113	156
„ Building „	..	..		12	18
Population	..	..	..	6,874	8,087
Males	..	..	..	3,223	3,796
Females	..	..	..	3,651	4,291

BIRTHS AND BIRTH-RATE.

During the year 1893 the births of 220 children were registered ; of these 115 were male, and 105 were female.

Estimating the population in the middle of the year at 8,350 the birth-rate was equal to an annual rate of 26·3 per 1,000 persons living.

The births in the district during the past 10 years have been as follows :—

Year.		Births.		Year.		Births.
1884	..	247	..	1889	..	236
1885	..	227	..	1890	..	227
1886	..	235	..	1891	..	232
1887	..	201	..	1892	..	211
1888	..	220	..	1893	..	220

The mean number of births is 226, so that the birth-rate in 1893 was rather below the average.

In England and Wales the birth-rate during the year was 30·8 per 1,000 persons living, a rate 1·1 per 1,000 below the mean rate in the ten years 1883-92.

GENERAL MORTALITY.

There were 155 deaths registered in this district during the year 1893, but to this number must be added the deaths of 6 persons in Horsham Workhouse which is outside the urban area, leaving the corrected total at 161.

Estimating the population at 8,350, the death-rate was equal to annual rate of 19·3 per 1,000.

In each quarter of the past two years the deaths were as follows:—

	Male.			Female.			Total.	
	1892.	1893.		1892.	1893.		1892.	1893.
First Quarter	34	14	..	44	23	..	78	37
Second Quarter	17	27	..	16	16	..	33	43
Third Quarter	13	16	..	9	24	..	22	40
Fourth Quarter	14	25	..	16	16	..	30	41
Year	78	82	..	85	79	..	163	161

The deaths in the past ten years are as here shown:—

Year.	Deaths.	Year.	Deaths.
1884	104	1889	106
1885	108	1890	131
1886	184	1891	163
1887	110	1892	163
1888	106	1893	161

In 1886 the high mortality was due to measles and lung diseases.

INFANT MORTALITY.

There were 30 deaths of infants under one year of age, and as there were 220 births, the rate of infant mortality was equal to 136 per 1,000, a figure which is high for a district of this kind, the rate for the whole of the combined district being 100.

In 1892 the ratio was 123 per 1,000 registered births.

In England and Wales the proportion of deaths under one year of age to registered births was 159 per 1,000 during the past year, the mean proportion in the preceding ten years having been 144.

POPULATION IN 1891.

In the preliminary census report issued in 1891 the number of persons living in this Urban Sanitary District was returned as 8,637. The corrected returns, recently issued, give the number as 8,087, and the Rural Sanitary District is thereby increased by this difference of 550.

The following table gives the corrected number living at different groups of ages:—

The ages of those living in this district were thus recorded at the census of 1891 :—

		Male.		Female.		Total.
Under 5 years	..	489	..	522	..	1,011
5 to 10	..	509	..	467	..	976
10 „ 15	..	457	..	496	..	953
15 „ 20	..	370	..	399	..	769
20 „ 25	..	286	..	365	..	651
25 „ 35	..	521	..	569	..	1,090
35 „ 45	..	444	..	491	..	935
45 „ 55	..	332	..	395	..	727
55 „ 65	..	201	..	278	..	479
65 „ 75	..	133	..	207	..	340
75 „ 85	..	49	..	89	..	138
85 „ 95	..	5	..	11	..	16
95 „ 100	..	—	..	2	..	2
Total		3,796		4,291		8,087

ZYMOTIC MORTALITY.

The deaths from zymotic diseases were 13 in the case of those which are notifiable, and 6 in the other class where the number of cases cannot be obtained.

					Deaths.
	Small-pox	..	..	..	4
	Scarlatina	..	..	..	none
	Diphtheria	..	..	..	3
	Membranous Croup	..	..	..	2
Fever.	Typhus	..	..	..	none
	Enteric	..	..	..	3
	Continued	..	..	..	none
	Relapsing	..	..	..	none
	Puerperal	..	..	..	none
	Cholera	..	..	..	none
	Erysipelas	..	..	..	1
Total		..	..	..	13

In the other class the deaths were from :—

				Deaths
	Measles	..	..	1
	Whooping Cough	..	..	2
	Diarrhoea and Dysentery	..	..	3
	Rheumatic Fever	..	..	none
Total		..	..	6

The Notification Act of 1889 is not in force in this district.

· SMALL-POX.—A mild case of modified small-pox appeared in a fairly isolated house in Spencer Road, Horsham. Mrs. R., 42 years of age, fell ill on February 2nd, and some spots appeared on the face and body on February 5th. She lived in a house with her husband and eight children, who were all vaccinated in infancy, and who were re-vaccinated on February 8th. The woman soon recovered.

The father and children were kept at home and isolation was very well carried out. The eldest son, 18 years old, was poorly on January 16th, and he had a few doubtful spots on his face, but the medical man who saw him did not consider it was variola.

Mrs. R. had never been vaccinated, but she was inoculated when a child.

A great many persons were re-vaccinated and there seemed every chance that the disease would be stamped out. All dirty clothing, &c., was burnt, and disinfectants were freely used. The mother may have been infected from the son, but there was no evidence to show how he caught the disease. There was no connection between this case and the one in the Union Workhouse. The son worked at a printing press, but no one there had been attacked in a similar manner.

An outbreak of small-pox occurred two months later in the Urban Sanitary District of Horsham which arose from the presence of small-pox in Horsham Workhouse, a place about a mile distant and in the rural district.

The disease appeared in four different houses:—

At No. 39, Stanley Street, Frank R., 12 years, visited the Workhouse on April 2nd, and in ten days he had a mild attack from which he recovered; the father fell ill on April 14th and he was removed to the Workhouse on April 18th.

At New Town, a girl, 19 years old returned home on April 4th, having been an inmate of the Workhouse for erysipelas; on April 8th she was attacked with modified small-pox, and the next day she was sent back to the House. Her father was attacked on April 20th, and he was sent to the Workhouse on April 21st.

At No. 1 Pirie's Place there was a house occupied by the parents and seven children, A girl, 13 years old, fell ill on April 13th, with modified variola and she was sent to the Workhouse on April 20th. Since then four other children in this house have had the disease, but in a very mild form.

All the cases were removed to the Workhouse, and treated in tents in an adjacent field.

At 6, Park Terrace, West, a man, 45 years of age, who had been working near the Workhouse was taken ill on April 12th, with confluent small-pox and he died on April 18th, and he was buried the next day. His wife fell ill on April 25th, and she was taken to the Workhouse on the following day.

In the four houses there were eleven cases and one death; ten of the cases were mild and recovered.

Each patient had been vaccinated in early life and some of them had lately been re-vaccinated.

The precautions taken were isolation and vaccination or re-vaccination of the inmates of the infected house or the neighbouring houses above ten years of age. The rooms in each house were well fumigated with burning sulphur.

The bedding, clothing, &c., likely to cause infection was burnt.

The Sanitary Inspector refused to go near any of these infected houses, but his duties were most efficiently carried out by Mr. Moses Brooks, the Sanitary Inspector for the rural district, and Mr. Miller, the Registrar of Births and Deaths, to whom my best thanks are especially due for their assistance in promptly stamping out the outbreak in the town.

It would have been a great advantage to the town if similar measures could have been carried out in the Union Workhouse when the disease first broke out.

WATER SUPPLY.

In my last annual report a detailed account was given of the proposed works for improving the water supply of the district. The new works were carried out under the direction of Mr. Hodson, M.I.C.E., who has been good enough to furnish me with a section of the strata through which a boring has been made. The result has corresponded with what he predicted in an able report which he made on the subject in 1892. On June 22nd, 1893, a strong spring was struck and now there is an ample supply of good water for the town which, so far as chemical analysis can reveal, is of a very good quality. Careful notes were taken by Mr. Hodson of the various strata passed through, and I

give here a short summary of the results, as such a deep boring through the Weald Clay is not of common occurrence.

	Feet.	Inches.
Weald Clay	4	0
Gravel	10	0
Brown Marl	46	0
Sandstone	8	0
Light Blue Clay	10	0
Sandstone composed of rounded quartz pebbles ..	6	3
Light Blue Clay	23	0
Light Blue Clay with hard bands	10	9
Sandstone composed of rounded quartz pebbles ..	10	1
Light Blue Clay with hard bands	17	6
Sandstone	51	0
Lignite.	0	6
Sandstone	47	2

The level of the ground at the top of the well is 178 feet above the sea level; the bottom of the borehole is 65·66 feet below the sea level. A strong spring of water was struck on June 22nd, 1893, at a depth of 28·5 feet below sea level, or at a depth 206·5 feet below the surface of the ground. The bottom of the old borehole was 128 feet below the surface.

The new supply of water is from the Lower Tunbridge Wells sands and it is not only abundant in quantity but also of excellent quality.

For many months the water was faintly cloudy owing to very minutely divided clayey particles being suspended in it but this will gradually improve.

The water was analysed by Prof. Frankland, F.R.S., who sent the following report to the Local Board on July 8th :—

“ Herewith I enclose results of analysis of a sample of water sent to me for analysis by Mr. T. E. Robinson in accordance with your instructions.

“ This water was very turbid, owing to operations in the pioneer borehole in connection with the Horsham Water Supply. The suspended matter was exceedingly fine and did not altogether subside after five days' rest. The water has a high degree of alkalinity equivalent to 23·2 parts of carbonate of soda per 100,000 parts. It is, therefore, as soft as distilled water, and has, in fact, no hardness at all. It contains a not immoderate amount of solid matters in solution; but for deep well water a large proportion of organic matter which imparts to the water a peculiar smell and taste somewhat like pepper. Assuming that this organic matter has not gained access to the water through inadvertence, I think it probable that it is derived from the boring of a

rock containing some bituminous matter, and will then probably cease to be dissolved by the water when the boring operations are completed. I have never before met with a water possessing this peculiar odour and taste. Provided this organic matter and the turbidity were removed, the water would be of excellent quality for dietetic and all domestic purposes. It exhibits no trace of previous sewage or animal contamination."

Analysis expressed in parts per 100,000 :—

Total solid matters	..	..	..	40·0
Organic carbon	..	..	..	0·188
Organic nitrogen	..	..	..	0·048
Ammonia	..	..	..	0·012
Nitrogen at nitrates and nitrites			..	0·0
Total combined nitrogen		..	..	0·058
Chlorine	..	..	..	2·2

Hardness :—

Temporary	..	..	..	0
Permanent	..	..	..	0
				—
Total	..	..		0

REMARKS :—Alkalinity equals 23·2 parts of carbonate of soda ; very turbid ; odour and taste somewhat like pepper.

DRAINAGE AND SEWERAGE.

On September 16th I again inspected the river Arun as it flows through this district to see what sources of pollution could be found.

1. There is an old barrel drain which discharges into the river close to an aerated water factory in the Worthing Road.

This drain conveys sewage from West Street, and also some drainage from Mr. Mitchell's brewery. The houses connected with this old drain should be cut off, and this source of pollution should be stopped. The river below this outfall was very foul, and as there was but little water in the river the nuisance was considerable, and there was much dirty black deposit on the banks and upon objects in the stream.

2. There was an old drain coming from the direction of the Causeway, discharging sewage into the backwater below the cascade.

3. There was an old drain coming from the direction of Normandy and discharging sewage into the backwater, close to the above drain No. 2. There was no water flowing over the cascade, and so the sewage in these two cases lay in stagnant pools in the bed of the river.

When wet weather prevails, this sewage will be washed into the river below the mill, but it does not now pollute the stream. The houses connected with these two drains should be cut off, and only surface or storm water should pass down them.

4. There is a tan-yard in the Brighton Road which discharges some waste products from the lime-pits and from the tan-pits into a ditch, which after pursuing a tortuous course, empties into the river at a point below Cheesworth.

Nothing has lately passed down this ditch in the lower portion of its course, and a few yards above the outfall there is a dam across the ditch which bays back any liquid above; this dam should be removed so that the flow of water be not impeded.

The ditch above, from the Brighton Road downwards, is in a very foul and offensive condition. It should forthwith be cleansed in the whole of its course, and the liquid refuse from the tan-works should pass into the main sewer.

There is some drainage from a few houses opposite the tan-works which flows into this ditch; this should be stopped, and the ditch should only be used for conveying surface or storm water.

At the time of my visit the only sewage actually flowing directly into the river within the limits of this district was from No. 1 drain, but it is clear that during wet weather there will be some pollution caused from all sources.

I visited Floodgates on October 6th, and I again found the river Arun to be in a most impure condition. When the penstock was open a mass of black offensive water rushed through the aperture.

About one-third of an inch of rain had fallen in the previous 24 hours, and as the temperature was cooler the river was not so offensive as on the previous occasion.

I am still of opinion that the nuisance is caused by the effluent from the Horsham Sewage Works falling into the stream.

I think that if the effluent could be carried to a point below Floodgates and there treated on the land no nuisance would arise.

The present nuisance would be abated if during wet weather the water in the river were allowed to flow through Floodgates and through Broadbridge Mill. This would, however, only be a temporary measure and the nuisance would be sure to recur.

At the end of the year nothing had been done, except that legal proceedings were in contemplation.

The general system of drainage and sewerage remains the same as detailed in my last report.

SYSTEMATIC INSPECTION.

There is no proper inspection of the district.

The sanitary condition of the district is in much the same condition as in 1892, and there is no improvement to be recorded.

There are five PUBLIC ELEMENTARY SCHOOLS, which are in a fair condition.

There are four COMMON LODGING HOUSES, two of which are well kept. One is a very old building and seems to be quite unfit for use.

There are seven SLAUGHTER HOUSES in the district, and these have been inspected during the year and kept fairly.

There are ten COWSHEDS and DAIRIES, but they are nearly all on a small scale.

No PROCEEDINGS were taken before the Magistrates during the year.

No case of OVERCROWDING was either reported or abated.

INQUESTS were held in six cases:—Male, 2 years, drowned by mother; female, 28 years, suicide by drowning; male, 43 years, suicide by hanging; female, 12 months, whooping-cough; male, 53 years, accidentally run over; female, 68 years, congestion of the lungs and heart disease.

There was one death returned as “not certified:”—Female, 8 months, pneumonia.

(A)—Table of DEATHS during the Year 1893, in the Urban Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.										
	At all ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.		1	2	3
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	Small Pox.	Scarlatina.	Diphtheria.
Horsham Urban Sanitary Authority	154	29	21	10	5	43	46	Under 5			1
								5 upwards.	1		2
Horsham Cottage Hospital ...	1					1		Under 5			
								5 upwards.			
								Under 5			
								5 upwards.			
								Under 5			
								5 upwards.			
								Under 5			
								5 upwards.			
								Under 5			
								5 upwards.			
								Under 5			
								5 upwards.			
								Under 5			
								5 upwards.			
TOTALS.....	155	29	21	10	5	44	46	Under 5			1
								5 upwards.	1		2
The subjoined numbers have also to be taken into											
Deaths occurring outside the District among persons belonging thereto.....	6	1				3	2	Under 5	1		
								5 upwards.	2		
Deaths occurring within the District among persons not belonging thereto...								Under 5			
								5 upwards.			

of HORSHAM, classified according to Diseases, Ages, and Localities.

MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN
UNDER FIVE YEARS OF AGE.

4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Membranous Croup.	FEVERS.					Cholera.	Erysipelus.	Measles.	Whooping Cough.	Diarrhoea and Dysentery.	Rheumatic Fever.	Ague.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease.	Injuries.	All Other Diseases.	TOTAL.
	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.													
2								1	2	2				11			31	50
		3					1			1			15	14	13	3	51	104
																1		1
2								1	2	2				11			31	50
		3					1			1			15	14	13	4	51	105

account in judging of the above records of mortality.

[illegible]

(B)—TABLE OF POPULATION, BIRTHS, AND OF NEW CASES

Officer of Health, during the year 1893, in the Urban Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	POPULATION AT ALL AGES.		Registered Births.	Aged under 5 or over 5.	NEW CASES OF SICK- COMING TO THE KNOWLEDGE OF					
	Census 1891.	Esti- mated to mid- dle of 1893.			1	2	3	4	5	6
					Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	FEVERS.	
(a.)	(b.)	(c.)	(d.)	(e.)					Typhus.	Enteric or Typhoid.
Horsham Urban Sanitary } District }	8,087	8,342	220	Under 5 5 upwards.						
Horsham Cottage Hospital ...		8		Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.			The	Infectious		is not
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
				Under 5 5 upwards.						
TOTALS	8,087	8,350	220	Under 5 5 upwards.						

OF INFECTIOUS SICKNESS, coming to the knowledge of the Medical
of HORSHAM; classified according to DISEASES, AGES, and LOCALITIES.

[illegible]

COMBINED SANITARY DISTRICT.
GENERAL REPORT.

pp. 181 et seq.

GENERAL REPORT

ON THE

HEALTH OF THE COMBINED SANITARY DISTRICT OF WEST SUSSEX.

POPULATION.

The corrected results of the Census, taken on April 6th, 1891, show that there were 106,476 persons in the combined district, against 88,038 on the same area in 1871, and 97,879 in 1881. Arundel, Midhurst, and Westbourne have joined the combination since 1871, but, for comparative purposes, the population of all the districts in the present area are here given at each of the last three census periods.

District.	Census 1871.	Census 1881.	Census 1891.
Steyning R. S. D.	14,060	.. 16,325	.. 19,110
Horsham R. S. D.	13,710	.. 15,426	.. 16,798
Petworth R. S. D.	10,147	.. 9,594	.. 9,431
Thakeham R. S. D.	8,335	.. 8,285	.. 8,049
East Preston R. S. D.	7,674 (a)	.. 8,025 (a)	.. 8,692
Midhurst R. S. D.	13,042	.. 13,965	.. 14,236
Westbourne R. S. D.	7,221	.. 7,420	.. 7,084
Worthing U. S. D. (c)	7,677 (b)	.. 11,665 (b)	.. 16,606 (a)
Littlehampton U. S. D.	3,266	.. 3,926	.. 4,452
Arundel U. S. D.	2,956	.. 2,748	.. 2,644
Total	88,038	97,379	107,102

(a) Including Heene, Rural. (b) Excluding Heene, Rural.

(c) Including West Worthing at each census period.

The increase in 1881 over 1871 was 9,341, and there was a further increase in 1891 over 1881 of 9,723. In the whole period of twenty years the increase amounted to 19,064 persons.

Nearly the whole of this increase took place in urban districts, or in places of an urban character. In seven of such places there was an *increase* in the twenty years of 15,792 persons, and in two urban districts there was a *decrease* of 759 persons during the same period, leaving the total *urban increase* at 15,033. The increase from 1871 to 1881 was 6,228, and there was a further increase of 8,745 from 1881 to 1891. In the last decade the towns grew faster than in the previous decade.

The population in the rural districts was nearly stationary in the last decade.

The population in nine urban or semi-urban districts rose from 25,014 in 1871, to 31,302 in 1881, and to 40,047 in 1891.

The population in 124 rural parishes rose from 63,024 in 1871, to 66,077 in 1881, and to 67,055 in 1891; in the rural districts there was less growth in the last than in the previous decade.

The above figures do not include the urban district of Horsham with a population of 8,087 in 1891, which only joined the combination at the end of that year.

The following statistics are based on a population estimated in the middle of 1893 at 117,140.

In the ten years 1882-91 there were 13,179 more births than deaths, while the increase in the population was only 9,723 from April 1881 to April 1891, so that although the towns grew, there must have been a great exodus amongst the rural population. The birth-rate declined steadily, and so far as numbers are concerned, the diminished births more than cancelled any improvement in the death-rate.

For the purposes of this Report the population in the middle of the undermentioned periods is taken as the basis of the calculations.

Period.....	1876-80.	1881-85.	1886-90.	1891.	1892.	1893.
Rural population, 7 districts }	69,760	80,450	82,820	83,436	83,750	84,200
Urban population, 4 districts }	14,040	19,780	22,200	23,830	32,620	32,940
<hr/>						
Total	83,800	100,230	105,020	107,266	116,370	117,140

The rural population has been increased since 1880 by the addition of Westbourne with 7,420 persons; and the urban population has been increased by the addition of Arundel, since 1882, with 2,748 persons, and by the addition of Horsham, since 1891, with 8,087 persons.

BIRTHS AND BIRTH-RATE.

During the year 1893 the births of 3,004 children were registered; of these 1,551 were male, and 1,453 were female.

Table 1 shows the various changes in the birth-rate during the eighteen years 1876-93. There has been a gradual decline in the number of births, and this decline is general throughout the country; in the year 1893 there was a slight rise above the rate in 1892.

TABLE 1.—Showing the Births and Birth-rates in the eighteen years, 1876-93.

PERIOD.	FIRST QUARTER.			SECOND QUARTER.			THIRD QUARTER.			FOURTH QUARTER.			TOTAL.			Annual birth-rate per 1,000 persons living.
	M.	F.	TL.	M.	F.	TL.	M.	F.	TL.	M.	F.	TL.	M.	F.	TL.	
1876-80 . .	1,610	1,671—	3,281	1,650	1,590—	3,240	1,612	1,509—	3,121	1,674	1,502—	3,176	6,546	6,272—	12,818	30·61
1881-85 . .	1,991	1,858—	3,849	1,900	1,693—	3,593	1,873	1,741—	3,614	1,785	1,715—	3,500	7,549	7,007—	14,556	29·64
1886-90 . .	1,776	1,729—	3,505	1,840	1,730—	3,570	1,733	1,651—	3,384	1,731	1,668—	3,399	7,080	6,778—	13,858	26·70
1891 . .	333	360—	693	394	359—	753	374	339—	713	343	335—	678	1,444	1,393—	2,837	26·58
1892 . .	410	300—	710	375	359—	734	379	331—	710	355	326—	681	1,519	1,316—	2,835	24·36
1893 . .	423	380—	803	400	367—	767	377	385—	762	351	321—	672	1,551	1,453—	3,004	25·80
Total . .	6,543	6,298	12,841	6,559	6,098	12,657	6,348	5,956	12,304	6,239	5,867	12,106	25,689	24,219	49,908	28·41
Per cent. . . .	. . .	. . .	25·73	. . .	. . .	25·36	. . .	. . .	24·65	. . .	. . .	24·26	. . .	. . .	100·000	

The births and birth-rate in each of the past three years are here shown :—

Year.	Population.	Births.		Total.	Rate per 1,000.
		Male.	Female.		
1891 ..	107,266 ..	1,444 ..	1,393 ..	2,837 ..	26·6
1892 ..	116,370 ..	1,519 ..	1,316 ..	2,835 ..	24·4
1893 ..	117,140 ..	1,551 ..	1,453 ..	3,004 ..	25·8

The birth-rate shows a gradual decline since 1879, when it was equal to 31·1 per 1,000 persons living.

The marriage-rate throughout the country reached its lowest point in 1886, when it was 14·2 per 1,000 ; it rose to 15·5 in 1890, and to 15·6 in 1891 ; and it declined to 15·4 in 1892, and to 14·7 in 1893.

In each quarter of the year the births were thus distributed :—

	Male.		Female.		Total.		Per cent.
First Quarter.	423 ..		380 ..		803 ..		26·7
Second Quarter.	400 ..		367 ..		767 ..		25·5
Third Quarter.	377 ..		385 ..		762 ..		25·4
Fourth Quarter.	351 ..		321 ..		672 ..		22·4
Total.	1,551 ..		1,453 ..		3,004 ..		100·0

The mean annual birth-rate in this combined district is here contrasted with similar figures for England and Wales.

Period.	Birth-rate	
	West Sussex.	England.
1876-80.	30·61 ..	35·4
1881-85.	29·63 ..	33·5
1886-90.	26·70 ..	31·4
1891.	26·58 ..	31·4
1892.	24·36 ..	30·5
1893.	25·80 ..	30·8

The diminution in the birth-rate is not confined to large towns or urban districts ; the following table shows the changes in the rate in the seven *rural* areas which form part of this combined district.

SEVEN RURAL DISTRICTS.

Period.	Population.	Births.		Mean Annual Birth-rate.
1876-80.	69,760 ..	10,875 ..		31·19
1881-85.	80,450 ..	12,136 ..		30·15
1886-90.	82,820 ..	11,197 ..		27·02
1891.	83,436 ..	2,293 ..		27·48
1892.	83,750 ..	2,088 ..		24·93
1893.	84,200 ..	2,228 ..		26·46

The four remaining *urban* districts of the combination give a similar result ; in their case, the annual rates are lower owing to the

age and sex distribution of the population, and there is also a great excess of unmarried females.

FOUR URBAN DISTRICTS.

Period.	Population.		Births.		Mean Annual Birth-rate.
1876-80. . . .	14,040	..	1,943	..	27·68
1881-85. . . .	19,780	..	2,420	..	24·46
1886-90. . . .	22,200	..	2,610	..	24·00
1891	23,830	..	544	..	22·83
1892	32,620	..	747	..	22·90
1893	32,940	..	776	..	23·56

In the eighteen years 1876-93, the births of 49,908 children were registered, and of these there were 25,689 males and 24,219 females; in each year the boys born were in excess of the girls.

Births are most frequent in the spring and they decline as the year advances.

BIRTHS IN 1876-93.

	Male.		Female.		Total.		Per cent.
First Quarter. . . .	6,543	..	6,298	..	12,841	..	25·73
Second Quarter ..	6,559	..	6,098	..	12,657	..	25·36
Third Quarter ..	6,348	..	5,956	..	12,304	..	24·65
Fourth Quarter ..	6,239	..	5,867	..	12,106	..	24·26
Total. . . .	25,689		24,219		49,908		100·00

GENERAL MORTALITY.

During the year 1893, the deaths of 1,899 persons were registered, and of these 961 were male and 938 were female.

Estimating the population in the middle of the year at 117,140 the death-rate was equal to 16·3 per 1,000 persons living.

District.	Population.		Deaths.		Death-rate.
Steypning	19,630	..	270	..	14·3
Horsham	17,050	..	235	..	13·8
Petworth	9,410	..	129	..	13·7
Thakeham	8,000	..	121	.	15·1
East Preston	8,800	..	145	..	16·5
Midhurst	14,280	..	183	..	12·8
Westbourne	7,030	..	126	..	17·9
Worthing	17,400	..	{ 426	..	24·5
			{ 401*	..	23·0*
Littlehampton	4,550	..	{ 57	..	12·5
			{ 56*	..	12·3*
Arundel	2,640	..	46	..	17·4
Horsham	8,350	..	161	..	19·3
Total.	117,140	..	1,899	..	16·3
			1,873*		16·0*

* Excluding visitors.

There were 1,887 deaths actually registered in the whole district, but to this number should be added the deaths of 34 persons occurring outside the district among persons belonging thereto; from this total of 1,921 there should be deducted the deaths of 48 persons occurring within the district among persons not belonging thereto, leaving the total number at 1,873. Of these 48 persons, 26 were visitors at Worthing and Littlehampton, while 22 were persons who died in Workhouses, and who came from places not included in the combination. The 26 deaths among visitors added to the above number of 1,873 make a total of 1,899 deaths.

The deaths and also the death-rates in each of the past three years are here shown :—

Year.	Population.	Deaths.		Total.	Rate per 1,000.
		Male.	Female.		
1891 ..	107,266 ..	951 ..	863 ..	1,814 ..	16·9
1892 ...	116,370 ..	990 ..	946 ..	1,936 ..	16·6
1893 ..	117,140 ..	961 ..	938 ..	1,899 ..	16·3

The death-rate in England and Wales in 1893 was equal to 19·2 per 1,000 persons living, the rate, however, being higher in large towns than in smaller places :—

	Death-rate in 1893.	Mean, 1884-93.
Town Districts	20·2 ..	20·2
Country Districts	17·4 ..	17·5
England and Wales ..	19·2 ..	19·2

The death-rates in this district during the nineteen years, 1875-93 are here contrasted with the rates in England and Wales; there is a general rise in recent years over the low rates prevailing in 1886-90.

Year.	West Sussex.	Town Districts.	Country Districts.	England.
1875	17·0 ..	24·2 ..	20·7 ..	22·7
1876-80	15·4 ..	22·4 ..	21·2 ..	20·8
1881-85	14·6 ..	20·4 ..	17·5 ..	19·4
1886-90	14·5 ..	20·0 ..	17·1 ..	18·9
1891	17·0 ..	21·1 ..	18·5 ..	20·2
1892	16·6 ..	19·5 ..	18·1 ..	19·0
1893	16·3 ..	20·2 ..	17·4 ..	19·2

In each quarter of the past year the deaths were thus distributed :—

	Male.	Female.	Total.	Per cent.
First Quarter	261	232	493	26·0
Second Quarter	244	220	464	24·4
Third Quarter	264	302	566	29·8
Fourth Quarter	192	184	376	19·8
Total	961	938	1,899	100·0

Deaths are more frequent in the cold months than in the warm months of the year; hence the death-rate is highest in the first quarter, it declines through the second quarter, reaching its lowest point in the third quarter, and again rising as winter advances. This ordinary distribution of deaths was disturbed in 1893 by exceptional circumstances, and chiefly by the prevalence of enteric fever.

In each quarter of the previous ten years the deaths were thus recorded :—

Year.	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	Total.
1883 ..	399	424	322	342	1,487
1884 ..	381	333	383	390	1,487
1885 ..	448	360	345	369	1,522
1886 ..	544	429	373	372	1,718
1887 ..	420	389	338	388	1,535
1888 ..	448	382	307	317	1,454
1889 ..	374	305	337	347	1,363
1890 ..	451	324	309	396	1,480
1891 ..	540	492	343	439	1,814
1892 ..	809	378	347	402	1,936
Total ..	4,814	3,816	3,404	3,762	15,796
Per cent. ..	30·5	24·2	21·5	23·8	100·0

The deaths at different groups of years are here shewn not only for the whole district but also for the urban and rural portions separately.

COMBINED DISTRICT, 1893.

	Under 1 year.	1 to 5.	5 to 15.	15 25.	25 to 65.	65 & over.	Total.
First Quarter ..	70	48	23	27	150	175	493
Second Quarter	57	54	40	39	143	131	464
Third Quarter..	122	34	52	70	168	120	566
Fourth Quarter	59	33	24	23	113	124	376
Year.							
1893	308	169	139	159	574	550	1,899
1892	300	164	88	102	577	705	1,936
1891	321	186	87	66	495	659	1,814
1890	256	110	59	88	414	553	1,480

FOUR URBAN DISTRICTS.

Year.	Under 1 year.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 & over.	Total.
1890	71	28	11	29	103	100	342
1891	76	58	23	12	148	159	476
1892	69	41	19	38	161	187	515
1893	98	59	60	86	218	169	690

SEVEN RURAL DISTRICTS.

Year.	Under 1 year.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 & over.	Total.
1890	185	82	48	59	311	453	1,138
1891	245	128	64	54	347	500	1,338
1892	231	123	69	64	416	518	1,421
1893	210	110	79	73	356	381	1,209

It is necessary to separate the urban and rural rates as the distribution of the population, as to age and sex, is so different in the two areas.

In towns there is an excess of females over males, which slightly lowers the rate, and there is also a great excess of persons in adult and

middle life which still further helps to lower the rate. The opposite conditions obtain in rural life, so that the death-rate is raised from 1 to 2 per 1,000 simply from the presence of these conditions and quite apart from sanitary circumstances.

The recorded death-rates for these two areas are here given :—

Year.	Urban Population.	Urban Death-rate.	Rural Population.	Rural Death-rate.
1890 ..	23,250	14·7	83,170	13·7
1891 ..	23,830	20·0	83,436	16·3
1892 ..	32,620	15·8	83,750	17·0
1893 ..	32,940	20·9	84,200	14·4

The table should be compared with a similar table for the urban and rural birth-rates given above.

The corrected death-rates have not yet been calculated.

The deaths, as a rule, are most frequent in the first quarter, and least frequent in the third quarter of the year; in 1893, the result was exceptional. The year might also be divided into three parts according to temperature; the following scheme gives the percentage of deaths at each period for the thirteen years 1881-93 :—

	Cold.	Deaths.	Per Cent.
December to March ..	..	7,790	38·2
	Moderate.		
April, May, October, November ..	..	6,517	32·0
	Hot.		
June to September ..	..	6,087	29·8
Total ..		20,394	100·0

Cold weather is most fatal while hot weather is the least fatal. Table 3 gives the deaths in each month of the years 1881-93 and from this table the above results are abstracted.

Table 4 is of interest, as it shows the number of deaths occurring at different periods of life. When these numbers are contrasted with the numbers living in each district at the same ages, it will be found that the death-rate is high under one year of age, while it rapidly decreases up to five years of age; it is very low in childhood and early youth, rising gradually up to sixty-five years of age; up to this period the rates are lower than those usually met with in urban districts, but after that age the death-rate is higher in rural districts. It will be seen that more than one-third of the deaths take place above sixty-five years of age. This is because in a healthy country district there is, from various causes, an accumulation of aged persons, and if the death-rates are low in early life, they must be higher in advanced life.

Similar figures for the urban districts cannot be given, as so many alterations have been made in the area that no comparative statement extending over so many years can yet be made.

TABLE 3.—Showing the Deaths in each Month in the ten years 1881-90, and in 1891-93.

Month.	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	Total.	1891	1892	1893
January ..	125	132	127	117	182	155	130	135	108	149	1,360	210	394	172
February ..	118	108	118	124	151	185	120	142	125	151	1,342	164	219	149
March ..	126	141	154	140	115	204	170	171	141	151	1,513	166	196	172
April ..	131	98	148	118	129	168	126	142	135	122	1,317	173	132	156
May ..	117	118	137	101	130	140	144	137	98	121	1,243	159	124	168
June ..	106	103	139	114	101	121	119	103	72	81	1,059	160	122	140
July ..	93	100	107	116	117	111	112	97	116	104	1,073	116	101	205
August ..	110	112	108	147	112	131	111	115	102	101	1,149	114	112	204
September ..	104	117	107	120	116	131	115	95	119	104	1,128	113	134	157
October ..	109	100	104	125	97	105	136	125	113	109	1,123	119	152	122
November ..	98	116	125	121	130	116	118	99	103	126	1,152	136	112	129
December ..	86	131	113	144	142	151	134	93	131	161	1,286	184	138	125
Year ..	1,323	1,376	1,487	1,487	1,522	1,718	1,535	1,454	1,363	1,480	14,745	1,814	1,936	1,899

TABLE 4.—Showing the Deaths at various groups of ages in the seven Rural Sanitary Districts in the 13 years, 1881-93.

Rural Sanitary District.	At all ages.	Under 1 year.	1 to 5.	5 to 15	15 to 25.	25 to 65.	65 and upwards.
Steyning	3,421	708	397	171	162	962	1,021
Horsham	2,948	538	276	167	152	818	997
Petworth	1,948	276	134	88	95	581	774
Thakeham	1,551	224	136	74	77	466	574
East Preston	1,580	249	138	92	85	453	563
Midhurst	2,794	445	265	146	149	784	1,005
Westbourne	1,439	246	120	79	64	379	551
Total	15,681	2,686	1,466	817	784	4,443	5,485
Per 10,000	10,000	1,713	935	521	500	2,833	3,498

INFANT MORTALITY.

During the year 1893 there were 308 deaths of infants under one year of age, out of a total of 1,899 deaths from all causes ; of these 178 were male and 130 were female.

There were 1,899 births, so that the infant mortality, as measured by the number of deaths under one year of age to every 1,000 children born, was 102·5, against a rate of 88, 86, 87, 112, 84, 77, 77, 97, 113, and 106, in the ten preceding years.

Throughout England and Wales the rate of infant mortality in 1893 was equal to 159 per 1,000, the mean proportion in the ten years having been 144. In large towns the infantile death-rate is very much higher.

In each district the rate of infant mortality during the past five years was as follows :—

	1889.	1890.	1891.	1892.	1893.	Mean.
Steypning	66	105	112	131	113	105·4
Horsham	76	112	85	122	94	97·8
Petworth	81	63	119	84	68	83·0
Thakeham	82	57	112	86	87	84·8
East Preston	88	88	102	93	88	91·8
Midhurst	66	86	127	107	71	77·4
Westbourne	69	63	87	108	142	93·8
Worthing	82	135	140	78	145	116·0
Littlehampton	58	45	107	111	48	73·8
Arundel	145	228	186	58	115	146·4
Horsham	—	—	—	123	136	129·5
Mean	77	97	113	106	102	99·1

It will thus be seen that the rate of infant mortality is much higher in the urban than in the rural districts, but it is not clear why the Arundel rate should be twice as high as that at Littlehampton. The death-rate of male infants is much higher than that of female infants ; it is true that more boys than girls are born, the ratio being 103 male births to 97 female births in the eighteen years, 1876-93, or in the proportion of 106 boys to 100 girls, but this will not account for the great disparity in the death-rates.

Year.	Under 1 year.		1 to 2.		2 to 5.	
	M.	F.	M.	F.	M.	F.
1890 ..	159	97	29	30	27	24
1891 ..	189	132	56	40	49	41
1892 ..	170	130	44	49	37	34
1893 ..	178	130	41	40	45	43
Total	696	489	170	159	158	142

Under one year of life there is a great preponderance of male deaths, and a similar excess, but in a much diminished degree, may be noticed up to five years of age, after which period the numbers are more nearly equal.

ZYMOTIC MORTALITY.

Out of 1,899 deaths from all causes in 1893, 384 were due to this class of disorders, or 3·28 per 1,000 persons living.

In England and Wales the rate from the seven principal zymotic disorders was equal to 2·47 per 1,000 persons living, against 1·86, 2·22, 2·14, 1·90, and 2·00 in the five preceding years.

There were in this district 284 deaths from diseases in 1893, which are notifiable, and 100 deaths in the other class, where the number of cases cannot be obtained.

Notifiable.			Not notifiable.		
Diseases.		Deaths.	Diseases.		Deaths.
Small-pox	..	10	Measles	..	20
Scarlatina	..	7	Whooping-cough	..	28
Diphtheria	..	36	Diarrhœa & Dysentery		57
Membranous Croup	..	8	Rheumatic Fever	..	5
Fevers	{ Typhus	..	none		
	{ Enteric	..	215		
	{ Continued	..	none		
	{ Relapsing	..	none		
	{ Puerperal	..	none		
Cholera	.....	..	none		
Erysipelas	..	8			
Total		284			100

There were also 39 deaths from Influenza.

The Infectious Disease (Notification) Act, 1889, came into operation at various periods in the years 1890 and 1891, and now it is adopted throughout the whole area except in the Urban Sanitary District of Horsham, which only joined the combination at the end of the year 1891.

There is no isolation hospital in the district except the infectious wards in each union workhouse. At Petworth there is a cottage which is occasionally used, and at Hangleton there is a hospital belonging to Hove, into which a few cases from this district were admitted previous to Michaelmas, 1893.

Table 5 shows the prevalence of various disorders in rural districts over the long period of eighteen years. Deaths from notifiable diseases are to non-notifiable diseases in the proportion of nearly five to seven. Whooping cough heads the list, followed by diphtheria, diarrhœa, enteric fever, measles, and scarlatina. Influenza during the past four years occupies a prominent place, but small-pox and typhus fever are of rare occurrence. About 121 deaths occur each year in this class, of which 51 are notifiable and 70 are non-notifiable.

Table 6 gives the death-rate in the same districts during the same period; the mean annual rate is low and it only amounts to 1·53 per 1,000 for all the group, while for notifiable diseases it is 0·64 per 1,000 and for non-notifiable diseases, 0·89 per 1,000 persons living.

TABLE 5.—Showing the Deaths from Zymotic Diseases in each of the seven Rural Districts in the eighteen years, 1876-93.

Period, 1876-93.	Notifiable.										Non-notifiable.					Total.		
	Small Pox.	Scarlatina.	Diphtheria.	Membranous Group.	Fevers.					Erysipelas.	Measles.	Whooping Cough.	Diarrhoea.	Rheumatic Fever.	Influenza.	Notifiable.	Non-notifiable.	Total.
					Typhus.	Enteric.	Continued.	Relapsing.	Puerperal.									
Steyning ..	1	50	75	5	8	56	6	—	10	18	44	128	160	11	47	229	390	619
Horsham ..	7	24	58	—	2	18	8	—	8	11	57	83	62	9	31	136	242	378
Petworth ..	2	9	55	—	—	19	—	—	4	6	8	37	18	4	20	95	87	182
Thakeham ..	1	25	36	—	2	17	—	—	6	13	9	67	30	4	26	100	136	236
East Preston ..	—	25	43	2	—	37	1	—	2	6	18	39	50	2	13	116	122	238
Midhurst ..	10	27	74	1	1	33	2	—	4	18	31	69	28	16	51	170	195	365
Westbourne (1881-93)	—	1	38	—	—	22	—	—	1	7	15	34	14	4	28	69	95	164
Total ..	21	161	379	8	13	202	17	—	35	79	182	457	362	50	216	915	1,267	2,182

TABLE 6.—Showing the Deaths from Zymotic Diseases in the seven Rural Districts in the 18 years, 1876-93.

Period.	Notifiable.									Non-Notifiable.					Total.		Mean annual Death-rate per 100,000 persons living.						
	Small-pox.	Scarlatina.	Diphtheria.	Membranous Group.	Typhus.	FEVERS.					Measles.	Whooping Cough.	Diarrhoea.	Rheumatic Fever.	Influenza.	Notifiable.	Non-notifiable.	Total.	Notifiable.	Non-notifiable.	Total.		
						Enteric.	Continued.	Relapsing.	Puerperal.	Cholera.												Erysipelas.	
1876-80 . .	6	56	66	—	4	46	10	—	15	—	14	48	124	118	10	—	—	217	300	517	62	86	148
1881-85 . .	7	73	147	—	5	57	5	—	11	—	36	35	100	92	15	—	—	341	242	583	85	60	145
1886-90 . .	2	25	83	—	4	52	2	—	8	—	16	58	136	105	10	22	38	192	331	523	46	80	126
1891 . .	—	2	20	2	—	7	—	—	1	—	3	14	34	13	6	122	35	105	140	233	42	126	168
1892 . .	—	—	33	—	—	3	—	—	—	—	5	9	44	12	5	34	41	192	233	49	229	278	
1893 . .	6	5	30	6	—	37	—	—	—	—	5	18	19	22	4	34	89	97	186	106	115	221	
Total . .	21	161	379	8	13	202	17	—	35	—	79	182	457	362	50	216	915	1267	2182	64	89	153	

Table 7 should be compared with table 6, as similar facts are here given for the four urban districts which in the previous table were given for the rural districts. The order of frequency is changed; diarrhœa precedes whooping cough, and measles and scarlatina precede diphtheria. In each table the extraordinary prevalence of enteric fever in 1893 introduces a disturbing element. Taking away from each table the deaths from this cause in 1893, it would appear that enteric fever is more common in the rural than in the urban districts.

The mean annual death-rate from all the causes mentioned in the tables is higher in urban than in rural districts, but this varies much from year to year. In 1876-80, the urban rates were highest, while in 1881-85 the rural rates were in excess of the urban, this was chiefly due to the mortality from diphtheria and whooping cough.

In the towns there was no death from typhus fever, and there was only one death from small-pox in the seventeen years 1876-92, but in 1893 it became more prevalent.

The following table shows the order of frequency in urban and rural districts during the years 1876-1893 :—

Urban.		Rural.	
1.	Enteric Fever		Whooping Cough
2.	Diarrhœa		Diphtheria
3.	Whooping Cough		Diarrhœa
4.	Measles		Influenza
5.	Scarlatina		Enteric Fever
6.	Diphtheria		Measles
7.	Influenza		Scarlatina
8.	Erysipelas		Erysipelas
9.	Rheumatic Fever		Rheumatic Fever
10.	Puerperal Fever		Puerperal Fever
11.	Small-pox		Small-pox

It must be noted, however, that enteric fever, as explained above, occupies an exceptional position.

The number of persons living at each period in the urban and rural districts respectively is given on page 182.

Table 8 shows the new cases of infectious disease notified in the three years 1891-93, and also the deaths occurring among them. As the Notification Act is not in force in the Horsham Urban Sanitary District the deaths in that area are excluded. Scarlatina is the disease most frequently noted, except in 1893, but the mortality from this cause is very low; diphtheria is less frequent, but its death-rate is much higher.

The case mortality in each of the three years is here given for urban and rural areas :—

Urban.			Rural.		
Cases.	Deaths.	Death-rate per 1,000 cases.	Cases.	Deaths.	Death-rate per 1,000 cases.
1891 .. 133	4	30·1	.. 282	35	124·1
1892 .. 124	10	80·5	.. 415	41	98·8
1893 .. 1486	182	122·5	. 741	89	120·1

Table 9 gives a general summary of the deaths from all causes and from various groups of diseases in the combined district for a period of eighteen years, 1876-93.

TABLE 7.—Showing the Deaths from Zymotic Diseases in four Urban Districts in the eighteen years 1876-93.

Period.	Notifiable.								Non-Notifiable.					TOTAL.		Total.	Mean annual Death-rate per 100,000 persons living.						
	Small-pox.	Scarlatina.	Diphtheria.	Membranous Group.	Fevers.				Typhus.	Enteric.	Continued.	Relapsing.	Puerperal.	Cholera.	Erysipelas.		Measles.	Whooping Cough.	Diarrhoea.	Rheumatic Fever.	Influenza.	Notifiable.	Not Notifiable.
1876-80 . .	—	26	10	—	—	7	1	—	4	—	2	15	27	34	3	—	50	79	129	71	113	184	
1881-85 . .	—	7	10	—	—	12	3	—	1	—	4	20	14	28	5	—	37	67	104	37	68	105	
1886-90 . .	1	24	19	—	—	17	1	—	1	—	5	13	55	36	5	3	68	112	180	61	101	162	
1891 . .	—	1	—	—	—	—	—	—	1	—	2	40	12	5	—	10	4	67	71	281	298		
1892 . .	—	1	5	—	—	3	—	—	—	—	3	3	5	8	2	19	12	37	49	37	113	150	
1893 . .	4	2	6	2	—	178	—	—	—	—	3	2	9	25	1	5	195	42	237	592	128	720	
Total . . .	5	61	50	2	—	217	5	—	7	—	19	93	122	136	16	37	366	404	770	83	107	190	

TABLE 8.—Showing the New Cases of Infectious Disease notified in the three years, 1891-93.

	Year, 1893.					Year, 1892.		Year, 1891.	
	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	Cases.	Deaths.	Cases.	Deaths.	Deaths.
Small-pox	1	20	—	—	21	6	—	1	—
Scarlatina	55	84	95	103	337	7	167	1	3
Diphtheria	32	46	44	51	173	33	189	36	20
Membranous Croup	2	3	1	2	8	6	3	—	2
Enteric Fever	20	323	1,157	59	1,559	212	79	6	7
Continued Fever	—	—	—	—	—	—	—	—	—
Puerperal Fever	3	2	2	1	8	—	2	—	2
Erysipelas	31	24	33	33	121	7	99	8	5
Total	144	502	1,332	247	2,227	271	539	51	39
Urban cases	52	330	1,047	57	1,486	182	124	10	4
Rural cases	92	172	285	192	741	89	415	41	35

Not including two deaths in 1892 and thirteen in 1893 in Horsham Urban District.

TABLE 9.—Showing the Deaths and Death-rate in the combined District from all causes and from various causes in the eighteen years, 1876-93.

Period.	All Diseases.	Zymotic		Phthisis.	Lung Disease	Heart Disease.	Population in the middle of each period.	All Diseases.	Zymotic		Phthisis.	Lung Disease.	Heart Disease.
		Notifiable.	Non-notifiable.						Notifiable.	Non-notifiable.			
1876-80 ..	6,496	267	379	714	947	549	83,800	1,552	64	90	170	225	131
1881-85 ..	7,195	378	309	691	1,081	655	100,230	1,436	75	61	138	216	131
1886-90 ..	7,550	260	443	765	1,206	772	105,020	1,438	50	84	146	230	147
1891 ..	1,814	39	172	123	346	163	107,266	1,691	36	160	114	322	152
1892 ..	1,936	53	229	135	343	201	116,370	1,663	45	197	116	295	172
1893 ..	1,899	284	139	149	226	160	117,140	1,629	242	111	127	193	137
Total ..	26,890	1,281	1,671	2,577	4,149	2,500		1,506	70	91	146	231	139

SALE OF FOOD AND DRUGS ACTS, 1875 AND 1879.

Summary of the report of the Public Analyst, Otto Hehner, Esq. appointed for the Western Division of the County of Sussex, upon the articles analysed by him under the above Acts during the year 1893.

First Quarter, ending March 31st, 1893.

Article.	Result.
Yeast, 3 samples.	One genuine, 2 adulterated with 15 and and 34 per cent. starch respectively.

Total number of samples analysed during the Quarter, 3. Adulterated 2.

Second Quarter, ending June 30th, 1893.

Spirits, 16 samples . . .	Ten genuine, 6 below legal strength (13. 13, 7, 7, 2, and 2 per cent. of added water.)
Milk, 18 samples	All genuine.
Butter, 17 samples . . .	All genuine.

Total number of samples analysed during the Quarter, 51. Adulterated, 6.

Third Quarter, ending September 30th, 1893.

Lard, 7 samples	Five genuine, 2 adulterated with 8 and 5 per cent. of beef fat respectively.
-------------------------	---

Total number of samples analysed during the Quarter, 7. Adulterated 2.

Fourth Quarter, ending December 31st, 1893.

No samples were taken for analysis during this Quarter.

A statement of convictions in West Sussex during the year ending December 31st, 1893, made by the Chief Constable, shows that there were seven convictions, of which one was quashed on appeal to the Quarter Sessions (without costs), on the ground that the appellants had received a sufficient warranty from the wholesale vendors in America that the lard invoiced to them was pure.

METEOROLOGY.

This subject is of interest from an agricultural as well as from a sanitary point of view.

The following tables give the

- a. Amount of Rainfall.
- b. Hours of Bright Sunshine.
- c. Accumulated Heat in Day Degrees.
- d. Earth Temperature.
- e. Climate of Worthing.

The Charts 1 and 2 give in a graphic form the amount of Sunshine and Accumulated Heat in the South of England for the cool dull year 1888 and the hot bright year 1893.

TABLE 10.—REGISTER OF RAINFALL IN 1893.

Kept at Ellesmere, Worthing, in the County of Sussex by C. Kelly.

Time of Observation, 9 a.m. RAIN GAUGE.—Diameter, 5in.; Height of top above Ground, 1ft.; Height of top above

Sea Level, 26·16ft.

Date.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Date.
1	in. —	in. —	in. ·08	in. —	in. —	in. —	in. —	in. ·05	in. —	in. ·03	in. ·21	in. ·05	1
2	—	·02	—	—	—	—	—	—	—	·22	·33	—	2
3	—	·10	—	—	—	—	—	·14	—	·01	·01	·01	3
4	—	—	—	—	—	·01	·74	·16	—	·18	·01	—	4
5	—	—	—	—	—	—	—	—	—	·38	·05	—	5
6	·05	·07	—	—	—	·04	—	—	·07	·18	—	·12	6
7	·03	·03	—	—	—	—	—	—	—	·32	—	04	7
8	·16	—	—	—	—	—	·03	—	·03	—	·01	·24	8
9	·52	—	—	—	—	—	—	—	·06	·54	—	·01	9
10	—	·22	—	—	—	—	·02	—	—	·08	—	·07	10
11	—	·06	—	—	—	—	·24	·02	—	1·95	—	—	11
12	·01	·04	—	—	—	—	—	—	—	—	—	·47	12
13	·05	·09	·08	—	—	—	·18	—	·23	·11	·06	·37	13
14	—	·05	—	—	—	—	—	—	·02	·02	·36	—	14

RAINFALL.

The rainfall at three different places in the combined district is here contrasted for a term of ten years :—

Year.	WORTHING.		PETWORTH.	
	Inches.	Rainy Days.	Inches.	Rainy Days.
1881	29·97	161	34·89	115
1882	32·70	191	35·69	145
1883	28·10	170	35·80	142
1884	24·75	119	26·65	115
1885	29·28	150	33·30	124
1886	31·89	164	38·09	147
1887	21·30	127	28·57	103
1888	25·73	175	35·38	116
1889	23·10	159	28·35	141
1890	22·74	149	29·30	139

Year.	WORTHING.		PETWORTH.		WESTBOURNE.	
	Inches.	Rainy days.	Inches.	Rainy days.	Inches.	Rainy days.
1891	29·86	172	42·15	164	35·94	198
1892	23·73	141	31·02	135	26·95	155
1893	25·12	122	28·56	129	27·75	158

Grouping the rainfall for the fifteen years, 1876-90, into three periods of five years each, the last period is seen to be much drier than the first :—

Period.	WORTHING.		PETWORTH.	
	Mean of 5 years. Inches.		Mean of 5 years. Inches.	
1876-80	32·00		41·07	
1881-85	28·96		33·27	
1886-90	24·95		31·94	

There was a difference of 7·05 inches at Worthing, and of 9·13 inches at Petworth between the first and last period. Since one inch of rain falling upon an acre means an amount of nearly 101 tons of water, it follows that between 700 to 900 tons less water fell per acre in the last five years than in the earlier exceptionally wet period.

The year 1893 was remarkable for the small amount of rainfall in the months of March, April, May, and June. Table 10 shows the actual amounts which fell on each day in each month of the year. In these four dry months only 1·28in. of rain was collected and the amount for the first half of the year was much below the average. July was a wet month, and vegetation which had been so long delayed came forward rapidly. A considerable amount of rain fell in the autumn and brought the total fall for the year up to the average. The prolonged drought was a source of great inconvenience, and special arrangements had to be made in many districts to supply the people with water.

A great many ponds were cleaned out, and thus not only much dirty mud was removed, but it allowed of a larger storage of water for the future.

HOURS OF BRIGHT SUNSHINE.

	WESTBOURNE. Rev. L. B. Birkett, M.A.			BRIGHTON. Dr. Newsholme.		Hours of Possible Sunshine.
	Hours.	Sunless days.		Hours.		
January . .	39·3	15	. .	29·75	. .	260
February . .	82·3	6	. .	80·62	. .	276
March . .	232·1	2	. .	193·80	. .	364
April . .	305·7	0	. .	280·65	. .	410
May . .	257·5	0	. .	223·40	. .	475
June . .	256·0	2	. .	247·54	. .	486
July . .	212·1	2	. .	212·81	. .	487
August . .	248·9	1	. .	258·59	. .	443
September . .	169·7	3	. .	167·39	. .	373
October . .	136·3	7	. .	141·37	. .	327
November . .	65·5	8	. .	69·48	. .	264
December . .	64·6	8	. .	66·30	. .	241
Year . .	2070·0	54	. .	1971·70	. .	4406

	Westbourne. Hours.	Brighton. Hours.	Greenwich. Hours.	South of England. Hours.
1890	1,773·8	1,708·8	1,255·0	1,491·0
1891	1,682·8	1,717·6	1,231·0	1,563·0
1892	1,859·8	1,756·6	1,277·6	1,684·0
1893	2,070·0	1,971·7	1,454·0	1,875·0
Mean	1,846·6	1,788·7	1,304·4	1,653·2

The observations at Westbourne are taken with a Jordan Photographic recorder; at the other stations the Campbell-Stokes recorder is used.

In Table 11, the hours of bright sunshine are given for a period of ten years and also the percentage of possible duration. Clear bright weather does not, however, always mean warm weather, and Table 12 has, therefore, been constructed so as to show the amount of heat above and below a certain fixed value which has been experienced during the past ten years. In this Table of Accumulated Heat the value is given in day degrees. A day degree is defined by the Meteorological Council as one degree continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours. So that three degrees, continued for eight hours, or four degrees for six hours, would equal one day degree of heat, the expression being analogous to that of a foot pound in mechanics. The observations are taken from the Kew records for the South of England. Along the coast sunshine records are kept at Brighton, Westbourne, Eastbourne, and Hastings and the amount registered is higher than in the northern parts of the county.

There is an advantage in using the Kew records, as the observations have been carried on for more than ten years, and they lend themselves more easily for comparison.

The coloured charts give the records for 1888 and 1893, as they offer the greatest contrast; the mean for the ten years would be very nearly the mean of these two years.

TABLE 11.—BRIGHT SUNSHINE.

Year.	Number of Hours.			Percentages of possible duration.			
	Jan. 1 to Mar. 31.	Jan. 1 to June 30.	Jan. 1 to Sept. 30.	Jan. 1 to Dec. 31.	Jan. 1 to June 30.	Jan. 1 to Sept. 30.	Jan. 1 to Dec. 31.
1884 ..	196	679	1,204	1,365	20	28	33
1885 ..	187	771	1,313	1,490	21	34	37
1886 ..	208	814	1,337	1,528	20	32	36
1887 ..	243	836	1,468	1,684	28	38	41
1888 ..	162	615	1,044	1,240	18	28	29
1889 ..	187	665	1,141	1,293	21	29	32
1890 ..	222	753	1,265	1,491	24	34	35
1891 ..	281	841	1,336	1,563	31	35	37
1892 ..	267	955	1,477	1,684	25	41	42
1893 ..	308	1,047	1,635	1,875	34	46	46
Mean ..	226	798	1,322	1,521	24.2	34.5	36.8
							34.5

TABLE 12.—ACCUMULATED HEAT.

Year.	Day degrees above 42° F.				Day degrees below 42° F.			
	Jan. 1 to Mar. 31.	Jan. 1 to June 30.	Jan. 1 to Sept. 30.	Jan. 1 to Dec. 31.	Jan. 1 to Mar. 31.	Jan. 1 to June 30.	Jan. 1 to Sept. 30.	Jan. 1 to Dec. 31.
1884 . .	330	1,288	3,041	3,495	119	185	185	310
1885 . .	202	1,133	2,694	3,055	345	402	405	573
1886 . .	107	1,034	2,748	3,348	555	590	590	760
1887 . .	179	1,162	2,729	3,033	453	524	524	836
1888 . .	83	941	2,363	2,876	517	577	577	701
1889 . .	149	1,300	2,843	3,277	427	448	448	624
1890 . .	254	1,227	2,802	3,285	271	305	305	758
1891 . .	155	1,128	2,658	3,144	515	565	565	721
1892 . .	156	1,161	2,685	3,053	490	554	554	759
1893 . .	302	1,579	3,327	3,799	353	373	373	559
Mean . .	191.7	1195.3	2789.0	3236.5	404.5	452.3	452.6	660.1

TABLE 13.—CLIMATE OF WORTHING.

MONTH.	TEMPERATURE.							Relative Humidity.	Amount of Cloud.	RAIN.	
	MEANS.					EXTREMES.				Amount.	No. of Days.
	9 a.m.	Min.	Max.	Range.	Mean.	Min.	Max.				
	deg.	deg.	deg.	deg.	deg.	deg.	deg.			per cent.	inches.
January	35.2	31.2	39.7	8.5	35.5	18.2	51.3	—	7.4	1.97	14
February	41.5	37.2	46.7	9.5	41.9	27.0	53.2	91	6.1	3.04	21
March	47.1	37.5	52.6	15.1	45.1	25.7	60.7	79	4.1	0.42	5
April	54.4	42.4	62.5	20.1	52.4	30.0	72.4	74	2.8	0.10	2
May	58.4	46.8	64.8	18.0	55.8	39.6	71.8	74	5.2	0.25	4
June	63.0	51.1	69.3	18.2	60.2	38.9	84.7	68	4.9	0.51	5
July	63.5	54.9	68.2	13.3	61.6	48.9	77.0	77	6.3	5.01	14
August	66.6	56.8	71.6	14.8	64.2	46.9	80.5	—	4.4	0.60	7
September	60.1	49.0	65.6	16.6	57.3	38.0	73.9	—	5.7	3.34	13
October	54.0	47.0	58.4	11.4	52.7	38.4	64.4	—	5.7	4.78	19
November	42.5	37.7	47.8	10.1	42.7	29.0	58.2	—	7.3	1.76	18
December	41.1	36.2	45.7	9.5	41.0	26.0	53.8	—	6.5	1.98	15

Year 1893.....	52.3	44.0	57.7	13.7	50.9	18.2	84.7	—	5.5	23.76	137
“ 1892.....	49.1	41.8	54.5	12.7	48.2	20.2	76.0	83	5.8	23.73	141
“ 1891.....	49.4	42.4	54.8	12.2	48.4	16.5	77.0	—	5.9	29.86	172
“ 1890.....	49.4	42.2	54.6	12.4	48.4	14.9	78.0	87	6.2	22.84	149
“ 1889.....	49.5	42.7	54.8	12.1	48.8	21.9	81.5	86	6.4	23.92	159
“ 1888.....	48.0	42.4	53.3	10.9	47.8	20.2	78.8	86	6.4	25.88	181
“ 1887.....	48.4	41.6	54.1	12.5	47.9	17.4	82.0	85	5.7	21.28	137
“ 1886.....	50.0	44.0	55.2	11.2	49.6	23.2	78.0	83	5.8	31.89	164
“ 1885.....	50.0	43.7	55.1	11.4	49.4	25.2	81.7	80	5.7	28.09	156
“ 1884.....	52.0	45.6	56.8	11.2	51.2	27.0	83.3	81	5.8	23.51	126
“ 1883.....	50.7	43.9	55.9	12.0	49.9	23.3	75.7	81	5.7	26.05	174
“ 1882.....	51.6	45.1	56.5	11.4	50.8	26.6	81.0	82	5.8	32.35	180
“ 1881.....	50.3	43.4	55.0	11.6	49.2	13.5	82.0	—	5.6	29.60	142

The above Table, up to the end of July, is taken from observations made by the late W. J. Harris, Esq., F.R.Met.Soc., who for many years past has kindly allowed me to make use of his records. The facts recorded concern Worthing only.

THE TEMPERATURE OF THE SOIL.

The temperature of the soil at 9 a.m., one foot below the surface of the ground at Worthing, was taken daily up to August by the late W. J. Harris, Esq., F.R.Met.Soc., and the results for each month for 1893, and also for a term of years, are here given:—

	1893.			1886.	1887.	1888.	1889.	1890.	1891.	1892.
	Mean deg.	Max. deg.	Min. deg.	Mean deg.	Mean deg.	Mean deg.	Mean deg.	Mean deg.	Mean deg.	Mean deg.
Jan.	35·7	41·9	33·3	37·7	37·3	38·3	39·3	42·7	35·1	37·5
Feb.	42·0	44·6	39·2	36·7	39·2	37·2	38·7	40·1	39·3	40·4
March	44·7	46·9	41·1	39·1	40·3	39·0	40·6	42·6	40·6	39·6
April	51·8	56·8	47·0	48·1	45·2	44·0	47·2	47·3	45·1	47·1
May	58·5	61·6	54·6	55·1	55·1	52·2	56·6	55·8	52·6	53·1
June	63·7	70·5	57·9	60·4	59·4	58·0	62·5	58·6	56·9	59·8
July	65·0	69·0	60·5	64·1	64·4	60·1	62·7	60·3	62·1	61·6
Aug.	—	—	—	63·8	63·1	60·9	61·0	61·2	60·6	62·7
Sept.	—	—	—	61·6	57·2	58·4	58·6	59·9	59·7	58·6
Oct.	—	—	—	54·2	49·9	49·8	51·5	52·3	53·8	48·7
Nov.	45·2	50·7	40·6	47·1	44·4	49·0	47·2	49·9	48·8	47·9
Dec.	42·3	45·6	38·8	36·0	40·2	44·2	40·5	36·0	42·6	40·1
Year	—	70·5	33·3	50·6	49·3	49·3	50·5	50·3	48·9	49·8

	Mean. degrees.	Maximum. degrees.	Minimum. degrees.
In 1882	51·8	66·5	36·0
In 1883	51·4	67·2	37·0
In 1884	52·6	71·0	38·4
In 1885	50·8	67·2	36·1
In 1886	50·6	67·2	34·3
In 1887	49·3	67·2	35·0
In 1888	49·3	64·2	34·6
In 1889	50·5	65·9	35·3
In 1890	50·3	63·9	33·8
In 1891	48·9	65·4	32·4
In 1892	49·8	65·3	34·4
In 1893	—	70·5	33·3

ACCIDENTS.

In the eighteen years 1876-93, there were 615 deaths caused by some form of accident; of these 469 were amongst males, and 146 amongst females, or in the proportion of 3·2 male to 1·0 female. This arises from the nature of the occupation to which men are exposed. The number of accidents happening to either sex each year varies but slightly, and the proportion in each district does not show any marked difference.

There is now an average of about 45 deaths per year, or 1 person in 2,600 dies annually from this cause.

Tables 14 and 15 give some interesting details, as to the frequency of accidents in each district and also as to the periods of life when they most frequently occur.

SUICIDES.

Two hundred and one persons committed suicide in the eighteen years 1876-93, and of these 164 were males and 37 were females, or in the proportion of 4·4 male to 1·0 female. There is now an average of about 11 deaths per year, or about 1 person in 10,000 dies annually from this cause.

Each district contributes in about similar proportions and there is no special incidence in any particular area. The numbers vary but slightly from year to year.

This mode of death is very rare in youth, but it is now and then met with in persons from 15 to 25 years of age; it is uncommon up to 40 years of age when it becomes more frequent, and it reaches its highest point at the ages of 60 to 80 years.

Tables 16 and 17 give some interesting details concerning the incidence of suicide in each sanitary district, and as to the periods of life when it most frequently occurs.

In 1890 the deaths in England and Wales from accidents were 11,600 among males and 4,663 among females. The deaths from suicide were 1,635 among males, and 570 among females. The deaths from these two causes were equal to a rate of 653 per million living, a ratio somewhat in excess of the average in the previous five years, which was 631.

These rates are much in excess of those recorded in the following tables. Females are much less liable to accident than males, owing, no doubt, to the nature of their occupation. Men commit suicide far more frequently than women, perhaps because they are less enduring of trouble and sorrow.

TABLE 14.—Showing the Deaths from Accidents in each Sanitary District in the eighteen years, 1876-93.

PERIOD.	Steyning R.S.D.	Horsham R.S.D.	Petworth R.S.D.	Thakeham R.S.D.	East Preston R.S.D.	Midhurst R.S.D.	Westbourne R.S.D.	Worthing U.S.D.	Littlehampton U.S.D.	Arundel U.S.D.	Horsham U.S.D.	TOTAL.	TOTAL BOTH SEXES.
1876-80	M. F. 28 4	M. F. 24 7	M. F. 17 4	M. F. 9 4	M. F. 15 3	M. F. 11 4	M. F. 7 5	M. F. 10 2	M. F. 8 2	M. F. — —	M. F. — —	M. F. 122 30	152
1881-85	M. F. 21 5	M. F. 23 8	M. F. 10 6	M. F. 20 3	M. F. 13 3	M. F. 16 7	M. F. 7 5	M. F. 13 4	M. F. 5 —	M. F. — —	M. F. — —	M. F. 128 41	169
1886-90	M. F. 22 8	M. F. 17 6	M. F. 13 3	M. F. 17 2	M. F. 13 3	M. F. 15 4	M. F. 8 3	M. F. 9 5	M. F. 4 3	M. F. 2 2	M. F. 2 2	M. F. 120 39	159
1891	M. F. 10 3	M. F. 3 1	M. F. 4 3	M. F. 2 —	M. F. 6 —	M. F. 3 —	M. F. 4 —	M. F. 2 3	M. F. 4 —	M. F. — 1	M. F. — 1	M. F. 38 11	49
1892	M. F. 9 2	M. F. 7 1	M. F. 1 3	M. F. 4 1	M. F. 1 1	M. F. 7 —	M. F. 1 —	M. F. 3 1	M. F. — 1	M. F. — —	M. F. — —	M. F. 33 10	43
1893	M. F. 3 1	M. F. 3 2	M. F. 4 1	M. F. 2 2	M. F. 7 1	M. F. 2 3	M. F. 1 2	M. F. 4 3	M. F. 1 —	M. F. — —	M. F. 1 —	M. F. 28 15	43
	93 23	77 25	49 20	54 12	55 11	54 18	21 10	41 18	22 6	2 3	1 —	469 146	615
Total	116	102	69	66	66	72	31	59	28	5	1	615	

TABLE 15.—Showing the Deaths and Death-rate from Accidents in the eighteen years, 1876-93.

Period.	Under 1 year.		1 to 5.		5 to 15.		15 to 25.		25 to 40.		40 to 60.		60 to 80.		80 and up- wards.		Total both sexes.	Annual death-rate per 100,000 persons living.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
1876-80 ..	10	8	11	2	12	1	13	1	23	3	27	5	22	8	4	2	152	36.2
1881-85 ..	6	7	20	10	15	3	18	1	20	1	26	4	16	10	7	5	169	35.0
1886-90 ..	12	5	10	13	14	7	22	—	19	3	23	4	15	6	5	1	159	30.6
1891 ..	3	3	4	1	7	1	2	—	5	1	12	2	5	1	—	2	49	45.9
1892 ..	2	2	3	—	7	—	8	1	4	1	4	—	5	3	—	3	43	36.9
1893 ..	—	2	—	2	2	—	4	1	4	1	11	4	4	5	3	—	43	36.7
	33	27	48	28	57	12	67	4	75	10	103	19	67	33	19	13	615	34.7
Total ..	60		76		69		71		85		122		100		32		615	

TABLE 16.—Showing the Deaths from Suicide in each Sanitary District in the eighteen years, 1876-93.

Period.	Steyning R.S.D.		Horsham R.S.D.		Petworth R.S.D.		Thakeham R.S.D.		East Preston R.S.D.		Midhurst R.S.D.		Westbourne R.S.D.		Worthing R.S.D.		Littlehampton R.S.D.		Arundel U.S.D.		Horsham U.S.D.		Total.		Total. both Sexes.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
1876-80 ..	10	1	6	1	2	—	3	1	1	2	5	2	—	—	5	1	1	—	—	—	—	—	—	33	8	41
1881-85 ..	8	3	5	2	8	1	7	—	4	3	3	3	1	1	10	2	4	—	—	—	—	—	50	15	65	
1886-90 ..	10	—	12	1	4	2	4	—	7	2	6	—	4	—	3	3	—	—	3	—	—	—	53	8	61	
1891 ..	2	—	1	—	1	—	1	—	—	—	1	1	—	—	4	—	—	—	—	—	—	—	10	1	11	
1892 ..	2	—	—	1	—	—	2	—	1	—	—	—	—	—	3	—	—	—	—	—	—	—	8	2	10	
1893 ..	1	—	2	1	—	—	1	1	2	—	—	—	—	—	2	—	1	—	—	—	—	—	10	3	13	
	33	4	26	6	15	3	18	2	15	7	15	6	5	1	27	6	6	—	3	—	1	2	164	37	201	
Total ..	37		32		18		20		22		21		6		33		6		3		3		201			

TABLE 17.—Showing the Deaths and Death-rate from Suicide in the eighteen years, 1876-93.

Period.	Under 1 year.	1 to 5.	5 to 15.	15 to 25.	25 to 40.	40 to 60.	60 to 80.	80 and up- wards.	Total.	Total both sexes.	Annual death-rate per 100,000 persons living.
	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.		
1876-80 ..	—	—	—	4 —	6 2	7 2	16 4	— —	33 8	41	9·8
1881-85 ..	—	—	1	5 1	10 3	20 4	15 5	— 1	50 15	65	13·0
1886-90 ..	—	—	—	4 1	6 1	20 4	19 2	4 —	53 8	61	11·7
1891 ..	—	—	—	— —	1 1	5 —	4 —	— —	10 1	11	10·3
1892 ..	—	—	—	1 1	3 —	2 1	2 —	— —	8 2	10	8·6
1893 ..	—	—	—	— —	2 1	7 1	1 1	— —	10 3	13	11·1
	—	—	1	14 3	28 8	61 12	57 12	4 1	164 37	201	11·2
Total ..	—	1	17	36	73	69	5	201			

(A)—Table of DEATHS during the Year 1893, in the Combined Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities. (a)	MORTALITY FROM ALL CAUSES AT SUBJOINED AGES.							(i)	1	2	3
	At all ages. (b)	Under 1 year. (c)	1 and under 5. (d)	5 and under 15. (e)	15 and under 25. (f)	25 and under 65. (g)	65 and upwards. (h)		Small Pox. (i)	Scarlatina. (j)	Diphtheria. (k)
Steypning R.S.D.	256	61	27	15	15	72	66	Under 5 5 upwards.		1 2	4 3
Horsham R.S.D.	241	38	21	9	10	82	81	Under 5 5 upwards.	1 7		3 3
Petworth R.S.D.	129	17	6	8	6	48	44	Under 5 5 upwards.			
Thakeham R.S.D.	120	18	9	10	11	34	38	Under 5 5 upwards.			4
East Preston R.S.D.	152	23	16	15	10	44	44	Under 5 5 upwards.		1	3
Midhurst R.S.D.	183	28	16	10	12	46	71	Under 5 5 upwards.			4 1
Westbourne R.S.D.	126	26	14	11	6	30	39	Under 5 5 upwards.			2 3
Worthing U.S.D.	427	54	33	44	75	142	79	Under 5 5 upwards.		1	2
Littlehampton U.S.D.	54	5	3	4	6	15	21	Under 5 5 upwards.			
Arundel U.S.D.	44	9	3	2	2	14	14	Under 5 5 upwards.		1	
Horsham U.S.D.	155	29	21	10	5	44	46	Under 5 5 upwards.	1		
TOTALS.....	1887	308	169	138	158	571	543	Under 5 5 upwards.	1 9	2 5	14 11

The subjoined numbers have also to be taken in

Deaths occurring outside the District among persons belonging thereto.....	34	1	1	1	5	10	16	Under 5 5 upwards.	1 2		
Deaths occurring within the District among persons not belonging thereto...	48	3	1	1	6	18	19	Under 5 5 upwards.	1 2		

of WEST SUSSEX, classified according to Diseases, Ages, and Localities.

MORTALITY FROM SUBJOINED CAUSES, DISTINGUISHING DEATHS OF CHILDREN
UNDER FIVE YEARS OF AGE.

4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Membranous Croup.	FEVERS.					Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhoea and Dysentery.	Rheumatic Fever.	Ague.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease.	Injuries.	All Other Diseases.	TOTAL.
	Typhus.	Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.													
3		1						3	3	10				12			51	88
1		5									1		24	18	26	3	85	168
									3					7		1	44	59
		1								3			21	24	22	7	93	182
									3					3			17	23
		1											15	14	15	5	55	106
							1		4					5		1	16	27
		4								2			8	14	11	5	45	93
		1						1	3	5				10		1	14	39
2		21						1					15	8	14	8	44	113
								3	2					10			25	44
		1					3	2					14	14	15	5	84	139
								3	1	2				5			27	40
		2					1	5			3		9	12	7	3	41	86
		9					1	1	7	17				14		1	36	87
		163					1			1	1		24	18	20	11	98	340
										2				1			5	8
		1											2	6	8	3	26	46
		1								1				2			8	12
		1								1			1	4	8		16	32
2								1	2	2				11			31	50
		3					1			1			15	14	13	4	51	105
5		12					2	12	28	39				80		4	274	477
3		203					6	8		8	5		148	146	159	54	638	1410

account in judging of the above records of mortality.

															1		2
													2	1	6	2	19
										1						1	4
		6											4	4	5	5	18

(B)—TABLE OF POPULATION, BIRTHS, AND OF NEW CASES

Officer of Health, during the year 1893, in the combined Sanitary District

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	POPULATION AT ALL AGES.		Registered Births.	Aged under 5 or over 5.	NEW CASES OF SICK- COMING TO THE KNOWLEDGE OF					
	Census 1891.	Esti- mated mid- dle of 1893.			1	2	3	4	5	6
					Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	FEVERS.	
									Typhus.	Enteric or Typhoid.
(a.)	(b.)	(c.)	(d.)	(e.)						
Steypning R.S.D.	19,110	19,630	540	Under 5		35	8	5		2
				5 upwards.		83	31			25
Horsham R.S.D.	16,798	17,050	394	Under 5		10	1			
				5 upwards.	12	49	13			11
Petworth R.S.D.	9,431	9,410	251	Under 5		1	1			
				5 upwards.	4	11	8			12
Thakeham R.S.D.	8,054	8,000	207	Under 5		1				
				5 upwards.		7	10			17
East Preston R.S.D.	8,712	8,800	260	Under 5	1	2	1			7
				5 upwards.	4	12	4	3		112
Midhurst R.S.D.	14,236	14,280	393	Under 5		2	4			
				5 upwards.		13	40			13
Westbourne R.S.D.	7,084	7,030	183	Under 5		3	5			1
				5 upwards.		8	40			9
Worthing U.S.D.	16,606	17,400	373	Under 5		10	1			81
				5 upwards.		38	4			1239
Littlehampton U.S.D.	4,452	4,550	105	Under 5		5				
				5 upwards.		16				13
Arundel U.S.D.	2,644	2,640	78	Under 5		9				2
				5 upwards.		19	2			14
Horsham U.S.D.	8,087	8,350	220	Under 5	1		1	2		
				5 upwards.	13		2			3
TOTALS	115214	117140	3,004	Under 5	2	78	22	7		93
				5 upwards.	33	256	154	3		1468

OF S.
KNOWLEDGE
5
FEBRUARY
1911

S OF SE

[illegible]

REPORT ON THE EPIDEMIC OF
ENTERIC FEVER IN 1893,
IN THE
BOROUGH OF WORTHING, IN BROADWATER, AND IN
WEST TARRING.

This Report, with fifteen coloured Charts, has been printed in a separate form by the authority of the Worthing Town Council. The reference to the Charts apply only to that report.

pp. 219 et seq.

REPORT ON THE EPIDEMIC OF ENTERIC FEVER IN 1893, IN THE BOROUGH OF WORTHING, IN BROADWATER, AND IN WEST TARRING.

The great epidemic of enteric fever in 1893 began in the spring and lasted until the end of the year. It affected not only the Borough of Worthing, and the adjoining villages of Broadwater and West Tarring, but it was also met with in many adjacent parishes, and it spread in several cases to large towns and distant places.

The storm which was presently to burst with such severity, was preceded in the third and fourth weeks of April by a marked prevalence of diarrhœa which attacked persons of all ages and classes, but which did not prove fatal. No special notice was taken of this disturbance, and no clear facts are forthcoming as to its clinical history, but it was at the time put down as due to climatic changes, and perhaps to the very dry weather. It is mentioned here because a similar experience was met with at Arundel in the autumn of 1890, where an outbreak of enteric fever, due to polluted water, was distinctly preceded by severe attacks of diarrhœa a month or six weeks previously.

Diarrhœa is not a notifiable disease, but when it occurs in abundance in any particular district, and only to a limited extent, or not at all, in adjacent areas, it should henceforth be examined into with much care, as it may prove to be the precursor of more serious trouble.

It is not clear whether this antecedent diarrhœa bears any relation to enteric fever, whether it may be due to a limited action of the poison which hereafter is about to produce worse results, or whether it predisposes a community to enteric fever by setting up an altered condition of the bowel so as to render it favourably situated for further attack.

This, however, seems clear that many who had diarrhœa also suffered from enteric fever afterwards, but conversely numbers who had enteric fever did not suffer from previous diarrhœa.

At present our knowledge seems limited to the fact that just as in times of prevalence of diphtheria there are numerous instances of antecedent sore throats in the affected area, so with enteric fever there are antecedent cases of diarrhœa in the same area.

THE FOUR AREAS.

The areas affected by the epidemic will be best understood by reference to the coloured charts 1 and 2.

There are here four distinct divisions, which should be carefully noted, as the variations in each division of the water supply and sewerage arrangements will serve to explain the behaviour of the outbreak and the extent of its incidence. No town could have been better plotted out so as to show more clearly the facts whence the cause may be made more evident.

Worthing and West Worthing are to the south of the maps and they have the sea for their lower boundary. Immediately to the north are the parishes of Broadwater and West Tarring, places which are in direct and constant communication with the Borough of Worthing. They have some points in common with each other and with the Borough, but they belong to the East Preston Rural Sanitary District, and therefore they come under a different authority. Each of these two parishes retains in a marked degree the characteristics of rural or village life, yet in each there are areas on which are built houses of a suburban character, and fitted with arrangements for water supply and drainage such as one usually meets with in towns.

It will be seen hereafter that the outbreak chiefly affected those places which had been more recently built, and which were furnished with modern sanitary appliances.

Worthing and West Worthing were separate towns up to 1890, when they were united into the present Borough. Each of these towns has a separate water supply and sewerage system, and up to 1890 each was under a separate sanitary authority.

An examination of chart 1 will show that the whole of Worthing area and a part of Broadwater are supplied from the Worthing waterworks, while the rest of Broadwater is supplied from wells.

The whole of West Worthing area and a part of West Tarring are supplied from the West Worthing waterworks, while the rest of West Tarring is supplied from wells.

In Worthing and also in West Worthing there are a few wells still in use.

An examination of chart 2 will show that the sewerage arrangements of the four areas differ much from those of the water supply. The whole of Worthing and a part of West Tarring have a main system of sewerage which has an outfall to the sea at the east of the town.

The whole of West Worthing has a system of sewerage to itself, and the outfall is to the west of the town.

In the parish of Broadwater there is no public system of sewerage and in this respect it is quite distinct from the other three areas.

PREVIOUS HISTORY.

Enteric fever prevailed in Worthing in the year 1865, due, it was then thought, to defective sanitary arrangements. It was again prevalent in the autumn of 1880, when the outbreak in November occurred specially on those who drank milk from a certain dairy, at which dairy there was a shallow well which had become polluted with sewage. In September of that year, other cases were also met with due to sanitary defects and following upon a very heavy thunderstorm on August 26th, when 1.45 in. of rain fell in rather more than hour, and at a time when there was a high tide and the main sewer was tide-locked.

The history of that epidemic is given in my 7th annual report. Since 1880 there has been nothing to record in the four areas of any special interest.

The number of deaths since 1880 in each area are here given :—

Year.	Worthing.	West Worthing.	West Tarring.	Broadwater.
1881	1	—	—	—
1882	1	—	—	—
1883	2	2	—	—
1884	2	—	—	—
1885	3	—	—	—
1886	1	—	—	—
1887	1	—	—	—
1888	—	—	—	—
1889	2	—	—	—
1890	2	—	—	—
1891	—	—	1	—
1892	2	1	2	—
1893(1stqrtr.)	2	—	3	—

This table shows that during 1892, and again early in 1893, there was some prevalence of enteric fever in West Tarring, and the facts are seen more clearly when the number of cases are taken into account.

The notifications received from August 3rd, 1890, when the Act came into operation, were thus recorded :—

Year.	Worthing.	West Worthing.	West Tarring.	Broadwater.
1890 (5 months)	9	1	—	—
1891	6	4	—	—
1892	4	16	15	2
1893 (1st quarter).	1	—	4	—

It is important to note that early in 1892 the adjacent districts of West Worthing and West Tarring were affected, and this small outbreak has been duly reported in my 19th annual report. Again in the winter of 1892-93 another series of cases were met with, few in number, but occurring in the same area of new houses in which the previous cases were recorded, and which later in the year was to be the scene of a more serious invasion.

After February 18th, 1893, no cases of enteric fever were notified in any one of the four areas up to the month of May.

Worthing was at that time very free from the disorder. No case had been notified from September 28th, 1892, up to February 18th, 1893, when one case was recorded in the centre of the town, and the

patient died on February 21st, from "inflammation of the lungs and typhoid fever."

A second death took place in Worthing Infirmary on January 17th from "typhoid fever and pneumonia," but this case was never notified, and some doubt existed as to its precise nature.

These two cases occurred several months before the epidemic, and the drainage from the houses in West Tarring passed down the main sewer a long way to the north of the waterworks.

There was, then, nothing in this previous history of the Borough to throw any light upon the outbreak which broke out in May.

COURSE OF THE EPIDEMIC.

TABLE II., giving the dates of notification, shows clearly the progress of the outbreak week by week. After May 8th the new cases followed each other with great rapidity, so that by June 9th, 284 persons had been attacked in Worthing, three in Broadwater, and one in West Tarring, who however had been removed there ill from a house in Worthing.

After June 9th there was a lull which lasted for three weeks. In the first week of July a second storm wave burst over the town, and on July 11th as many as 64 cases were notified in the twenty-four hours.

Chart 3 shows in a coloured and graphic form the rise and fall of the epidemic in Worthing, while charts 6, 7, and 8, show similar facts for Broadwater, West Worthing, and West Tarring.

In tables I. and II. the numbers of those who had probably caught the disease by drinking Worthing water are printed in words and the rest are printed in figures. The first six cases in West Worthing and the first ten cases in West Tarring could, I think, be attributed to having partaken of polluted water from the Worthing waterworks. After that time, the rest of those attacked were affected by drinking water from the West Worthing mains.

Each chart is made on a similar plan, and shows the cases notified from April 15th to November 17th, when the epidemic was practically over; the four cases occurring in December are entered, however, in tables I. and II.

It was soon found that a better idea of the rise and fall of the fever cases could be obtained by inquiring into the date of attack, and this information I obtained from the commencement.

Chart 4 shows the date of attack of each case in Worthing from April 15th to November 17th, and the curves, thus obtained, are more regular and uniform than when notifications only are taken into account. Charts 6, 7, and 8 give similar information for Broadwater, West Worthing and West Tarring. The general course of the curves is similar in each chart, but those cases notified appear, of course, at a later date than those attacked.

The "date of attack" may be defined as the day on which the patient first felt ill enough to go to bed, to send for the doctor, or to leave off work; it was not easy to make a more practical definition.

The tables and charts will make the incidence of the disease in each area more easy to understand than any written description.

The cases have been placed in four parallel columns so that the prevalence in the different areas at different periods of time may be readily traced.

TABLE I., showing for each area, in weekly periods, the “ dates of attack ” from April 15th to December 31st, 1893 :—

Week ending		Worthing.		Broadwater.		West Worthing.		West Tarring.	
April	21	..	4	..	—	..	—	..	—
„	28	..	5	..	1	..	—	..	—
May	5	..	52	..	—	..	—	..	one
„	12	..	101	..	2	..	—	..	—
„	19	..	74	..	—	..	—	..	—
„	26	..	32	..	—	..	—	..	—
June	2	..	16	..	—	..	—	..	—
„	9	..	8	..	2	..	—	..	—
„	16	..	22	..	—	..	—	..	—
„	23	..	37	..	—	..	—	..	—
„	30	..	93	..	3	..	two	..	three
July	7	..	298	..	9	..	two	..	three
„	14	..	150	..	10	..	one	..	two
„	21	..	75	..	2	..	one	..	one
„	28	..	37	..	1	..	4	..	3
August	4	..	73	..	3	..	20	..	18
„	11	..	49	..	3	..	10	..	9
„	18	..	29	..	1	..	1	..	5
„	25	..	18	..	—	..	4	..	2
September	1	..	12	..	—	..	—	..	—
„	8	..	17	..	—	..	7	..	1
„	15	..	24	..	—	..	2	..	—
„	22	..	5	..	—	..	—	..	1
„	29	..	5	..	—	..	—	..	1
October	6	..	5	..	1	..	1	..	2
„	13	..	1	..	—	..	—	..	3
„	20	..	4	..	—	..	—	..	—
„	27	..	5	..	2	..	—	..	—
November	3	..	3	..	—	..	—	..	—
„	10	..	2	..	1	..	2	..	—
„	17	..	1	..	—	..	1	..	—
„	18 to Dec. 31	..	4	..	1	..	—	..	—
Total ..		..	1,261		42		58		55

TABLE II., showing for each area, in weekly periods, the number of new cases of fever "notified" from April 29th to December 31st, 1893.

Week ending		Worthing. Broadwater. West Worthing. West Tarring.							
May	5	..	1	..	—	..	—	..	—
„	12	..	39	..	1	..	—	..	one
„	19	..	122	..	1	..	—	..	—
„	26	..	67	..	1	..	—	..	—
June	2	..	35	..	—	..	—	..	—
„	9	..	20	..	—	..	—	..	—
„	16	..	4	..	2	..	—	..	—
„	23	..	8	..	—	..	—	..	—
„	30	..	7	..	—	..	—	..	—
July	7	..	139	..	4	..	one	..	three
„	14	..	244	..	9	..	three	..	two
„	21	..	174	..	9	..	one	..	one
„	28	..	92	..	—	..	one	..	one
August	4	..	59	..	1	..	6	..	one, 6
„	11	..	63	..	5	..	20	..	16
„	18	..	57	..	3	..	7	..	9
„	25	..	29	..	1	..	3	..	6
September	1	..	14	..	—	..	3	..	1
„	8	..	13	..	—	..	4	..	1
„	15	..	14	..	—	..	3	..	—
„	22	..	19	..	—	..	1	..	—
„	29	..	12	..	—	..	1	..	1
October	6	..	5	..	—	..	—	..	3
„	13	..	3	..	1	..	1	..	—
„	20	..	3	..	—	..	—	..	—
„	27	..	6	..	—	..	—	..	1
November	3	..	2	..	—	..	—	..	—
„	10	..	4	..	—	..	—	..	1
„	17	..	2	..	3	..	3	..	1
„	24	..	—	..	—	..	—	..	—
December	1	..	—	..	—	..	—	..	—
„	1 to 31	..	4	..	1	..	—	..	—
Total		..	1,261		42		58		55

In the first portion of the outbreak and up to the end of July, the cases were confined to Worthing and Broadwater, but after that date there was a further extension to West Worthing and West Tarring under conditions presently to be described.

There was also a rise in Worthing in the week ending August 4th. From September 15th there was a rapid decline in the number of persons attacked, but this decline is not so visible in the table of notifications until the end of September. After this date there were very few cases recorded week by week, and by the end of the year the storm wave, so sudden in its outburst, so strange in its behaviour, so disastrous in its results, passed quietly away.

AGE AND SEX DISTRIBUTION.

Since, out of the 1,416 persons attacked with fever in the four areas, there were 665 males to 751 females, it might at first sight be supposed that the incidence of the disease was greatest amongst the latter class. This, however, is not the case.

By taking out the numbers at each age period for the Borough of Worthing it will be seen that there is a very great excess of females.

The corresponding figures cannot be given for West Tarring and Broadwater.

The following tables IV., and V., show the point very clearly.

Of the 6,878 males living in the Borough 619, or 90·0 per 1,000 were attacked; of the 9,728 females, 700 or 71·9 per 1,000 were attacked.

Charts 9 and 10 show the same facts in a graphic form.

The shaded portions in chart 9 show the population, and the coloured portions show the persons attacked.

Again, taking the number of cases and deaths in each of the four areas, it will be seen that the case mortality was equal to 13·27 of those attacked, being higher among females than males. The case mortality showed a great excess in West Worthing.

Charts 5, 6, 7, and 8 show in a graphic form for each area, the number of cases of each sex, their age distribution, and the dates of death for each sex at different ages.

TABLE III., showing for each area the number of cases, the number of deaths, and the case mortality:—

	Cases.			Deaths.			Case Mortality.		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
Worthing ..	599	662	1,261	65	90	155	10·85	13·60	12·29
West Worthing	20	38	58	5	10	15	25·00	26·31	25·86
West Tarring ..	29	26	55	5	4	9	17·24	15·40	16·36
Broadwater ..	17	25	42	2	7	9	11·76	28·00	21·43
<hr/>									
Total ..	665	751	1,416	77	111	188	11·58	14·78	13·27

TABLE IV., showing for each age period in groups of five years the number of *males* living in the Borough of Worthing, the number of those attacked, and the rate per 1,000.

Age period.		Number living at each age period.		Number of male persons attacked at each age period.		Rate per 1,000 living of those attacked at each age period.
0 to 5	..	892	..	52	..	58·3
5 „ 10	..	932	..	156	..	167·4
10 „ 15	..	973	..	142	..	145·9
15 „ 20	..	663	..	92	..	138·8
20 „ 25	..	489	..	53	..	108·4
25 „ 30	..	440	..	46	..	104·5
30 „ 35	..	444	..	19	..	42·8
35 „ 40	..	401	..	25	.	62·3
40 „ 45	..	333	..	9	..	27·0
45 „ 50	..	339	..	12	..	35·4
50 „ 55	..	242	..	4	..	16·5
55 „ 60	..	203	..	4		19·7
60 „ 65	..	147	..	1	..	6·8
65 „ 70	..	145	..	1	..	6·9
70 „ 75	..	116	..	2	..	17·2
75 „ 80	..	68	..	1	..	14·7
80 „ 85	..	40	..	—	..	—
85 „ 90	..	7	..	—	..	—
90 „ 95	..	4	..	—	..	—
95 „ 100	..	—	..	—	..	—
100 and upwards	..	—	..	—	..	—
Total .	..	6,878		619		90·0

The table should be read thus: Out of 932 males living between the ages of five to ten years, 156 males, or 167·4 per 1,000 were attacked; out of 973 males living between the ages of ten to fifteen years, 142 males, or 145·9 per 1,000 were attacked, &c.

TABLE V., showing for each age period in groups of five years the number of *females* living in the Borough of Worthing, the number of those attacked, and the rate per 1,000.

Age period		Number living at each age period.		Number of female persons attacked at each age period.		Rate per 1,000 living of those attacked at each age period.
0 to 5	..	813	..	29	..	35·7
5 „ 10	..	902	..	124	..	137·4
10 „ 15	..	988	..	140	..	141·7
15 „ 20	..	1,058	..	131	..	123·8
20 „ 25	..	1,043	..	87	..	83·4
25 „ 30	..	818	..	65	..	79·5
30 „ 35	..	703	..	34	..	48·3
35 „ 40	..	603	..	32	..	53·1
40 „ 45	..	583	..	20	..	34·5
45 „ 50	..	515	..	12	..	23·3
50 „ 55	..	414	..	10	..	24·1
55 „ 60	..	328	..	6	..	18·3
60 „ 65	..	323	..	4	..	12·4
65 „ 70	..	239	..	2	..	8·4
70 „ 75	..	186	..	2	..	10·8
75 „ 80	..	123	..	1	..	8·1
80 „ 85	..	61	..	1	..	16·4
85 „ 90	..	25	..	—	..	—
90 „ 95	..	2	..	—	..	—
95 „ 100	..	—	..	—	..	—
100 upwards	..	1	..	—	..	—
Total ..	..	9,728		700		71·9

The table should be read thus: Out of 1,043 females living between the ages of twenty to twenty-five years, 87 females, or 83·4 per 1,000 were attacked; out of 818 females living between the ages of twenty-five to thirty years, 65 females, or 79·5 per 1,000 were attacked, &c.

METEOROLOGY.

I herewith give in some detail various tables showing the rainfall, the earth temperature, the amount of bright sunshine, the accumulated heat, and the climate of Worthing, because the exceptional weather of 1893 had, in my opinion, a considerable share in determining the course of the outbreak.

The coloured charts show in a graphic form the facts which are set forth in the printed tables 11 and 12 on pages 204 and 205.

The hours of *bright sunshine* in the South of England are here given for 1888 and 1893, and are contrasted with the mean number in the ten years, 1884-93.

	Mean 1884-93.	1888.	1893.
	Hours.	Hours.	Hours.
First Quarter	226	162	308
Second Quarter	572	453	739
Third Quarter	524	429	588
Fourth Quarter	199	196	240
Total	1521	1240	1875

The *accumulated heat*, i.e., the number of day degrees above 42° F., is also given for the same periods.

	Mean 1884-93.	1888.	1893.
	Day deg.	Day deg.	Day degs.
First Quarter	191·7	83	302
Second Quarter	1003·6	858	1277
Third Quarter	1593·7	1422	1748
Fourth Quarter	447·5	513	472
Total	3236·5	2876	3799

The day degrees below 42° F. are not shown in the chart.

The hot, bright year 1893 is contrasted with the cool, dull year 1888, and the charts, if carefully examined, bring out very clearly the points of difference. The hours of bright sunshine do not sufficiently show the amount of heat, as very sunny weather might be associated with a cool temperature. The chart showing the accumulated heat is therefore given, by which it will be seen that there was a great prevalence of temperature all through the months when the epidemic was also prevalent; in the last three months of the year the fever cases declined in numbers, and the temperature was somewhat below the mean.

The results, as shown by the readings of the earth thermometer, are also of much interest, because the water in the mains must have been of a higher temperature than usual for many months in the year, and this may have favoured the growth and development of any microbes that may have played any part in the history of the outbreak.

The thermometer at Worthing is placed 1 foot below the surface of the ground, and the instrument is read off at 9 a.m. each day. In no previous year has there been so high a reading obtained in June. At Brighton the earth temperature is taken at a spot 4 feet below the surface. Dr. Newsholme has kindly furnished me with the following figures, which show that even at that depth the earth was much warmer than usual.

				Mean degrees.	Max. degrees.	Min. degrees.
January ..	..	..	..	40·7	43·0	39·5
February ..	..	..	..	42·8	44·0	41·0
March ..	..	..	..	45·0	46·5	43·5
April ..	..	..	..	49·0	52·0	47·0
May ..	..	..	..	54·0	55·8	52·0
June ..	..	..	..	57·8	59·0	56·0
July ..	..	..	..	60·2	61·0	58·8
August ..	..	..	..	62·2	63·4	61·0
September ..	..	..	..	60·6	62·0	58·5
October ..	..	..	..	57·0	58·6	55·2
November ..	..	..	..	50·9	55·0	48·0
December ..	..	..	..	46·7	48·0	45·8
Year ..	..	..	..	52·24	63·4	39·5

The year 1893 was marked by a prolonged period of drought which lasted from March 2nd to July 4th.

There were 106 days during these four months on which no rain fell, and on the remaining 18 days of this period, the amount that fell only measured 1·20 inch.

There was an average rainfall in January and February, but up to the end of June the amount was far below the average, and only 6·77 inches were registered in the first half of the year.

July was a wet month, but it was followed by a very dry August. The remaining four months of the year were wet, and 12·83 inches were then collected, an amount slightly in excess (0·33in.) of that which was registered in the first eight months.

The table on page 202 shows the rainfall and the number of rainy days in each month of 1893.

There were during the year 142 rainy days, and the total collection of rainfall amounted to 25·12 inches.

Table 13 on pages 206 and 207 shows the climate of Worthing from 1881 to 1893.

THE TEMPERATURE OF THE SOIL.

The temperature of the soil at 9 a.m., one foot below the surface of the ground at Worthing, was taken daily up to August by the late W. J. Harris, Esq., F.R.Met.Soc., and the results for each month for 1893, and also for a term of years, are here given :—

	1893.			1886.	1887.	1888.	1889.	1890.	1891.	1892.
	Mean deg.	Max. deg.	Min. deg.	Mean deg.	Mean deg.	Mean deg.	Mean deg.	Mean deg.	Mean deg.	Mean deg.
Jan.	35.7	41.9	33.3	37.7	37.3	38.3	39.3	42.7	35.1	37.5
Feb.	42.0	44.6	39.2	36.7	39.2	37.2	38.7	40.1	39.3	40.4
March	44.7	46.9	41.1	39.1	40.3	39.0	40.6	42.6	40.6	39.6
April	51.8	56.8	47.0	48.1	45.2	44.0	47.2	47.3	45.1	47.1
May	58.5	61.6	54.6	55.1	55.1	52.2	56.6	55.8	52.6	53.1
June	63.7	70.5	57.9	60.4	59.4	58.0	62.5	58.6	56.9	59.8
July	65.0	69.0	60.5	64.1	64.4	60.1	62.7	60.3	62.1	61.6
Aug.	—	—	—	63.8	63.1	60.9	61.0	61.2	60.6	62.7
Sept.	—	—	—	61.6	57.2	58.4	58.6	59.9	59.7	58.6
Oct.	—	—	—	54.2	49.9	49.8	51.5	52.3	53.8	48.7
Nov.	45.2	50.7	40.6	47.1	44.4	49.0	47.2	49.9	48.8	47.9
Dec.	42.3	45.6	38.8	36.0	40.2	44.2	40.5	36.0	42.6	40.1
Year	—	70.5	33.3	50.6	49.3	49.3	50.5	50.3	48.9	49.8

It will thus be seen that the earth temperature in 1893 was much higher than usual from March to July, the difference from the mean of the seven years 1886-92 being very high for the months of May, June, and July.

	1886-92.	1893.	Difference.
	°F.	°F.	°F.
May ..	54.36	58.55	+ 4.19
June ..	59.37	63.70	+ 4.33
July ..	62.19	64.98	+ 2.79

From the 13th to the 23rd of June there was a marked rise in the earth temperature, the highest point being reached on June 20th.

The reading of the earth thermometer at 9 a.m. on four successive days is here recorded :—

	°F.
June 17	68.3
„ 18	68.8
„ 19	69.8
„ 20	70.5

These were the hottest days in the year, and the reading of the maximum thermometer in the four corresponding days was respectively 81.0°, 81.2°, 84.7°, and 83.7°.

On July 3rd, 4th, and 8th, the earth temperature was equal to 69°F., and it was also very high in the middle of August.

The very high readings in June are of importance in connection with the second portion of the outbreak.

MILK SUPPLY.

Whenever a household was invaded by the fever, a note was made of the source whence the milk supply was obtained. There are 15 milk vendors in Worthing, and, with few exceptions, the inhabitants of the four areas have their milk from one or other of them. A careful analysis was made of the customers supplied from each dairy, and of the relation in numbers between the persons attacked, the houses invaded, and the houses supplied. In none of the four areas did it appear that there was any special incidence of the disease amongst those who obtained their milk from any particular dairy. The persistence of the disease, the age and sex distribution of those attacked and the absence of any known disease amongst the dairy cows, negatived the idea of milk having taken any part in the causation of the fever. The escape of West Worthing and West Tarring from invasion, previous to the end of July, and the invasion of those areas in August, while in the other two areas supplied by many of the same vendors, the fever had been so prevalent, point to a similar conclusion.

The milk supply, therefore, may be excluded from further consideration.

SEWERAGE AND DRAINAGE.

The general plan of the sewerage arrangements can be seen on chart 2, where it will be seen that the whole of the Worthing sewers are coloured blue and that they discharge by a 30in. iron pipe into the sea, about $1\frac{1}{2}$ miles east of Worthing Pier.

New sewers were laid down a few years ago in some streets to the north of the railway, where some new houses have been lately built on land between the old village of Broadwater and the town; these sewers join the Worthing system.

A considerable number of houses have within the last ten years been built in West Tarring, between the old village and the railway, and as this building land became developed, new sewers were laid down and these were also joined to the Worthing system. All the sewers coloured blue on chart 2 belong to one system, and discharge into the sea to the east. Many houses in the old village of West Tarring have cesspits or earth closets. West Worthing has a system of sewerage to itself and the outfall-sewer discharges by an iron pipe about a mile to the west of the Worthing Pier.

These sewers are coloured red in the chart. There is no connection whatever between the two systems. Broadwater has no public system of sewerage, indoor water closets are rare, and the drainage is chiefly into cesspits, while house water is often utilised on the cottage garden.

Worthing and part of West Tarring are thus linked together as regards sewerage arrangements, while the other two areas of West Worthing and Broadwater are quite distinct. The appearance of the fever at the same time in Worthing and Broadwater does not harmonise with the view which some held that the sewers or sewer emanations were the cause of the outbreak, for in that case West Tarring and not Broadwater would have been attacked. The further outbreak in August which occurred at the same time in West Worthing and West

Tarring also negatives the idea that faulty sewers played any part in causing the disorder, for these places also are on quite different systems.

In 1878 a new main sewer was laid along the course of the Teville Stream ; it is shown in chart 2 as a straight blue line extending from a point near the Worthing Railway Station in an easterly direction to a point in the brooks, east of Meadow Road, when it takes a more southerly direction, and ends at the outfall.

This brick barrel sewer is from 3ft. 6in. to 4ft. in diameter, and it was made of this size so as to be able to hold a large quantity of sewage whenever the outfall was tidelocked, a circumstance which occurred twice in every twenty-four hours. From this year the pumping at the old works ceased, and all the Worthing town sewerage flowed by gravitation to the sea.

The old works were disused in 1878, and the High Street sewer was diverted, so as to pass in a north-easterly direction to join the new main sewer ; it is shown on chart 13 as a straight red line.

After these new works were completed, the old abandoned sewer was bricked across at two points, one between High Street and the Waterworks enclosure, and one between the enclosure wall and the sewage well ; later on, it was partially filled up.

The sewage well and the chain pump well were filled up with earth, after the brick walls had been pulled down. In September, 1892, the carrier pipes from the old sewage well were removed as far as the south-east corner of the enclosure wall, and more recently fresh portions have been removed between this wall and Lyndhurst Road. In 1885, some of the 15in. pipes were removed in the north-east corner of the enclosure for a space of about ten feet ; this space was then filled in with earth, and a brick wall set in cement was built across each exposed end. The removed portions are shown on chart 13 by blank spaces in the course of the dotted lines.

In connection with the sewerage arrangements there still remains for careful consideration the old system of sewers in and about the Waterworks enclosure. For this purpose charts 13 and 14 should be carefully studied. The plan of the Worthing Waterworks shows an enclosure of about two acres in extent, in which the three wells A, B, and C, are shown with the headings connecting each ; these are all coloured blue. In 1857, a main system of sewerage and water supply was carried out by the old Local Board of Worthing

The sewage from the town was received by a main sewer which came down High Street, and terminated in a sumpt, 6ft. 2 in. by 2ft. 10in., and a sewerage well, 30 feet deep and 10 feet in diameter at the top, reduced to 6 feet at the bottom.

In this well there was placed a sewerage pump, consisting of three 15in. barrels, worked by steam power, and connected with the engine in the water tower by an iron shafting and driving gear, by which the sewage was pumped through an outfall sewer emptying itself into the sea, at a place two miles westward of the town, called Sea Mill Bridge. The works were carried out by Mr. (now Sir) Robert Rawlinson, and at the time they were considered very perfect of their kind.

Probably some alterations were afterwards carried out, for when the old works were abandoned, two chambers, as shown on chart 14, were filled up; they are said to have been 36 feet deep, one of which was called the sewage well, or sumpt, and the other was called the chain pump well; the first received the raw sewage which passed into the second well by a 15in. pipe which connected the two at the bottom. Thence the sewage was pumped from the sewage well by two pipes to the sewage farm which lay to the east of the town towards the brooks. One of these pipes was a 12in. iron rising main, and the other was a 15in. stoneware pipe. They are shown on chart 13 as red dotted lines proceeding from the wall of the waterworks enclosure towards Lyndhurst Road; the intervening portion was removed about 15 years before the outbreak. From the chain pump well there were three 15in. earthenware pipes which passed in a north-easterly direction to the Teville Stream, and acted as a storm overflow. They are shown on chart 13 as red dotted lines, broken near the enclosure wall where some pipes were removed in 1885, and then after passing beneath Park Road, the most southerly one is joined by a sewer in Park Road, which also receives the drainage from the Infirmary; this pipe is now connected to the main sewer; the other two remain as they were before, connected with the Teville Stream. Chart 14 shows these wells and pipes in section.

Although at first sight the wells and headings seem to be surrounded by a network of sewers, yet, in reality, these disused, abandoned tubes formed hollow spaces in the earth, cut off from any possible connection with the main sewer through which sewage was daily flowing. They were examined in the month of June, when the three 15-inch pipes within the enclosure were removed, but on no occasion was there any evidence to show that they played any part in the causation of the outbreak.

If they caused no harm anterior to 1878, when sewage was daily flowing through these channels, on what grounds can it be maintained that they were injurious in 1893, when during the interval of fifteen years, the clean earth around, or with which the pipes were partly filled, must have destroyed long ago anything harmful?

It has been said that the new main sewer to the west of the enclosure was in a leaky condition. This brick barrel sewer is surrounded with a layer of concrete, and when this outer backing or coating of concrete was removed there was some little oozing of sewage between the bricks, but there is no evidence that this leakage occurred in the ordinary condition, *i.e.*, before the concrete was removed. If such leakage were a matter of daily occurrence, the water in the various wells must have been liable to pollution for several years past, and especially at times of rainfall and very high tides, but the previous history of fever in the Borough shows that at any rate no harm resulted. If sewage could find its way into the water in any of the three wells, the chemist would doubtless have been able to detect its presence, and the fact that the water in May and June was found so pure from a chemical point of view must raise grave doubts as to sewage pollution being a cause.

The sewer on the east side of the enclosure was made with pug joints, and when the distal end was plugged, and the sewer filled with

water, some leakage occurred through the faulty joints, but a sewer, made with pug joints, is not in a leaky condition when there is a free course for the flow of sewage through it. The Infirmary drain was daily flushed during the latter half of May, and the month of June, with a 3in. hose, and on no occasion was any obstruction found. The fall in the sewer was good, and the sewage readily flowed down to the main sewer.

When there is a heavy rainfall coinciding in point of time with a high tide, *i.e.*, when the outfall sewer is tidelocked, then no doubt the sewage backs up in the main sewer even as far as Montague Street, and this has happened on several occasions within the last few years, but not since 1880 with any untoward results. This may have been due to the great increase in the number of ventilating shafts during the last thirteen years. But this is quite clear that from March 2nd to July 4th, there was no fall of rain whatever to cause any such result; so dry was the earth during this period that the little rain that fell was quickly absorbed by the ground at once, and it only served to lay the dust.

During all this period the barometer was steady, and rather higher than usual; there was no storm on any occasion, and there was certainly no specially high tide.

Therefore we have to meet this difficulty. Anterior to the epidemic there had been conditions of much rainfall and very high tides, which might have been favourable to leakage from the sewers, but without any evil effects resulting.

From March to July the opposite conditions existed, and yet a serious outbreak of fever arose. And for many years no change whatever has taken place in the arrangement of the sewers and drains in this area.

The only fresh work that has been carried out in this area was the driving of the new heading in the spring of 1893.

I cannot see that there is sufficient evidence to warrant one in accepting faulty sewers as a cause of the first part of the outbreak, still less can these faults explain the second part of the outbreak, as in the interval between the two the overflow pipes within the enclosure had been removed, and the Park Road sewer had been opened and relaid.

Nor can faulty sewers explain the outbreak in West Worthing and West Tarring during the month of August, when undoubtedly polluted water was the cause.

WATER SUPPLY.

Up to the year 1857, the inhabitants were supplied from wells, most of which were 20-25 feet in depth. The water bearing stratum is about 15-18 feet from the surface of the ground, but in very wet weather the water level has been found within 18 inches of the surface in houses to the north of the railway.

In 1857 the well marked A in Chart 13 was sunk to a depth of 67ft. 9in.; from the bottom of this well a borehole pipe was driven for another 300 feet. This well is lined with iron cylinders, but to increase

the supply, sixteen holes were afterwards bored in the cylinders at a depth of 60 feet from the surface, whereby an additional quantity of water was obtained.

As the town increased in size, and more water was needed, a second well, marked B on Chart 13, was sunk in 1867, to a depth of 111ft. 6in.; thence a pipe was driven for another 300 feet.

This new shaft was at first connected with well A by a syphon pipe, the short leg of which reached the bottom of well A, while the longer leg dipped to the bottom of well B; the horizontal connection being at a depth of nearly 30 feet from the ground level. This syphon is no longer used, and in 1880, a new horizontal tunnel, 6ft. by 4ft. driven from the bottom of the well shaft A, directly connected A with B. This tunnel is 113 feet long, it is lined with brick set in cement, but each third brick is left out on each side at the bottom, so as to allow additional water to enter.

In 1885 the Local Board sank a well in the north-east corner of their land, but when it was sunk to a depth of $18\frac{1}{2}$ feet the supply of water was so great that it was clear that the top of a fissure had been reached; this well was abandoned and filled up, while a fresh well, marked C in Chart 13, was in the same year dug to a depth of 72 feet, and at a distance of about 60 feet to the south-west of the now abandoned shaft. No borehole was made from the bottom of well C, as experience showed that more water was gained by driving headings into the chalk than by boring to any greater depth.

All these wells were dug in a confined area not more than two acres in extent, and each well gave an additional supply of water without in any way exhausting the other.

Chalk is not an uniform stratum, but it contains in its upper beds layers of flints which run in parallel courses six feet or more apart. The intervening chalk allows water to percolate slowly, but the fissures, in which the flints lie, allow water to flow along with great rapidity; the larger the fissure, the swifter and more abundant is the flow. A well, therefore, may be dug, or a heading may be driven, in the intervening chalk without obtaining any considerable quantity of water, but when a large fissure is reached, the rush of water may be one of great volume.

A section of the soil in the waterworks yard shows the following strata:—

					Ft.	In.
Made earth	..	..	..	..	3	6
Mould	..	..	..	..	2	0
Brick earth	..	..	..	..	2	0
Sandy loam	..	..	..	..	2	6
Sandy marl	..	..	..	..	5	6
Marl	..	..	..	..	1	0
Chalky marl	..	..	..	..	1	6
					<hr/>	<hr/>
					18	0

Below this point the chalk is met with, containing in its upper portion numerous beds of flint.

Between the sea shore and the South Downs, there is a large deep trough running from east to west, and filled with tertiary beds and alluvial soil.

The water in the public wells at Worthing is derived from the rainfall which sinks into the Chalk Downs to the north of the town. It appears to flow in a direction from north-west to south-east. The waters in the chalk beds flow under the above-mentioned trough, and rising up again with a sharp bend they open on the porous surface just above the chalk, and flow away towards the sea.

Chart 14 shows the water level when no pumps are at work; the water, coloured blue, is seen to stand in the wells, and in a fissure to the right, at a point about 18 or 20 feet from the surface, and then it finds its own level into the surrounding soil.

There is no advantage in sinking a well too deep, for the flint beds or fissures, whence only any large volume of water can be obtained, do not extend to any great depth, probably not more than 80 or 100 feet

In the grey chalk bed below, no fissures are met with.

An examination of Chart 14 will show that the new heading did not tap a new source; it merely brought into direct connection with well C a supply of water which for many years past had supplied that well in a small degree, but now in a greatly increased quantity.

Whatever source of pollution affected the abandoned well of 1885, could not have been influenced by the more abundant flow when the fissure was tapped some 50 feet lower, for the water was flowing rapidly in an upward direction.

The influence of this pressure at the deeper level was felt by the divers who went down on August 23rd in the vain effort to stop the opening in the fissure made on April 14th.

A strong solution of salt was, on August 17th, thrown down the abandoned well of 1885 which had previously been re-opened to a depth of 22ft. The water from well C was then chemically examined for chlorine and an enormous increase was soon afterwards found, but this only shows what I have stated above that the water in well C was drawn from an area which included the fissure at the bottom of the abandoned well.

When two powerful divers went down well C on August 23rd, to try to stop the opening at the extremity of the new heading, I noticed that air bubbled up through the water standing in the bottom of the abandoned shaft, and therefore at the upper limit of the column of water in the fissure; this was just what might have been expected.

The yield in January, 1893, was from 377,909 to 584,818 gallons with a daily average of 496,090 gallons; on thirteen occasions the tunnels were emptied. In February the supply was still short, and it varied from 471,090 to 533,454 gallons; on seven occasions the tunnels were emptied.

On March 6th the new work commenced, and on the 11th the men had finished bricking across the tunnel and fixing a 9in. sluice valve.

On March 13th, a fresh lot of men began to excavate for the new heading, and on the 16th, the night gang commenced to line the tunnel with bricks. The two gangs were quite distinct; as one set removed chalk and made the heading during the day, the other set followed and lined the heading during the night.

The heading had been driven 20 feet by March 2nd, and on the next day a pump was fixed for removing the air in the tunnel.

By the evening of April 13th the heading had been driven 68 feet into the chalk, but the lining brick wall only extended to 64 feet, and the arch was only completed for a length of $54\frac{1}{2}$ feet.

The next day, April 14th, at 2.0 p.m., a fissure in the new tunnel was reached at a distance of 70 feet, and the water flowed into the heading very rapidly, so that the men hastened to escape, leaving behind them a pick, a shovel, and the pump.

Both engines were connected and ran 23 revolutions per minute, but the water still rose at the rate of 3 feet in 25 minutes, and the pump in the excavations was soon under water.

This pump and the tools were removed a few days afterwards by a diver sent down for the purpose.

The sluice valve which was fixed at the bottom of well C to prevent any water from this well, or from the new heading, passing into the tunnel leading to wells A and B, did not effect its purpose.

On Saturday afternoons and on Sundays, and also when the pump became blocked, the turbid water from the new heading was pumped up into the reservoir and also into the public mains. Many persons at this time frequently noticed that the drinking water was cloudy at intervals. Thus for some days previous to the fissure being struck the people were drinking in small quantities some of the water from the new heading. The reservoir also was receiving much dirty, chalky water which settled at the bottom and formed a sludge. This was the sludge which was afterwards found by Dr. Crookshank to be in a filthy state.

Two sets of men were employed in making the new heading. The day gang began to work on March 13th in excavating the chalk, while on March 16th the night gang begun to line the tunnel with bricks. There is no doubt that the works became polluted by the conduct of one or two of the night gang, who were not regular labourers in the town. Some of the men who had been at work there gave distinct evidence of this, and some of the day gang complained at times of the foul air in the cutting when they went down to work in the morning. This information was given at the very beginning of the outbreak, although for obvious reasons no one cared to come forward and complain.

I consider that this pollution was the main cause of the epidemic, and that it brought about a condition of the reservoir and service pipes which was potent for harm.

There is no evidence, however, that any one down in the well was suffering, or had been suffering, from enteric fever; but is such evidence necessary?

On May 2nd a sample of water, from the new heading, was sent to Dr. Dupré, F.R.S., for analysis, and received by him on May 3rd; the water stood in Well C within 27 feet of the surface of the ground, and the bottle was filled at the depth of about six inches from the level of the water. It was thought at the time that it would be better to take a sample from the bottom of the well at a spot as near as possible to the

opening of the new heading. The second sample was therefore taken on May 6th from Well C at a depth of 30 feet below the water level, and of 57 feet below the ground level. In a report dated May 6th Dr. Dupré remarks on the first sample that "The water is clear, almost colourless, inodorous, and yields no deposit on standing. It shows no indications of pollution by sewage or surface drainage, but has all the characteristics of a pure chalk water. It is rather hard, but not to an objectional degree, and becomes soft on boiling. It would, however, be improved for general domestic purposes, by being submitted to a process of softening."

In a report dated May 12th, Dr. Dupré remarks on the second sample that, "The water is clear, almost colourless, and inodorous. It gives no deposit on standing. The present sample is a distinct improvement on that of May 3rd, 1893, and the water has now all the characteristics of a pure chalk water, showing no signs of any pollution by sewage."

ANALYTICAL DETAILS.

				Sample 1	Sample 2
				taken May 2, 1893.	taken May 6, 1893.
Appearance	..	..	..	Clear.	Clear.
Colour.	..	..	..	Almost colourless.	Almost colourless.
Smell	..	..	..	Inodorous.	Inodorous.
Deposit	..	..	..	None.	None.
Nitrous acid	..	..	..	None.	None.
Phosphoric acid	..	..	..	Strong trace.	Trace.
Poisonous metals	..	..	..	None.	None.
Hardness before boiling	..	..	..	20·3 degrees Clark.	19·2 degrees Clark.
„ after „	..	..	..	5·0 „ „	4·7 „ „
				Grains per gallon.	Grains per gallon.
Oxygen absorbed from per-	manganate		}	0·035.	0·006.
Total dry residue				27·16.	27·16.
Colour of „	..	..	..	White.	White.
Behaviour of residue on	ignition		}	Darkens very	Darkens scarcely
				slightly.	perceptibly.
Burns off very readily.					
Chlorine	..	..	..	2·73.	2·97.
Nitric Acid	..	..	..	1·44.	1·79.
Ammonia	..	..	..	0·00056.	0·00168.
Albuminoid Ammonia	..	..	..	0·0028.	0·0007.

An examination of the storage reservoir on the the top of the tower was made on May 14th, when the interior was found to be in a very dirty condition, and, besides some chalky ooze, there were several brown or dark patches of sludge. This reservoir had not been cleansed for four years.

Three samples were taken on May 15th for analysis, just previous to the emptying of the tank.

Sample A consisted of water taken close to the bottom of the tank without disturbing the sediment more than possible.

Sample B consisted of some dirty sludge taken from the bottom of the tank in places where a brown or black deposit was noticed.

A third sample of the ordinary water in daily use was taken, but the bottle was broken in transit; as a consequence another sample was taken on May 23rd from the bottom of the Well C, close to the new heading, at a depth of 72ft. 6in., the water in the well standing 29ft. 6in. below the ground level. The sample was marked C. These three samples A, B, and C, were sent to Professor Crookshank directly after they were collected, and his report dated May 29th, was received on the following day. This bacteriological report is here given :—

“These samples were examined with as little delay as possible, as a very considerable increase in the number of bacteria may occur if the samples be kept for several days before the analysis is commenced.

“I would lay special stress upon the fact that a bacteriological examination may demonstrate the presence of poisonous or of disease-producing bacteria when their detection would not be possible by any known method of chemical analysis.

“The contagia of such diseases as cholera, diphtheria, typhoid fever, may be present in such small numbers that no chemical analysis would give a suspicion of contamination, and yet being living organisms capable of increasing in a suitable environment with enormous rapidity, a very few once gaining access to the human subject will produce the grave disorders with which they are associated.

“The method which I have principally relied upon in investigating the Worthing water is as follows :—

“I avoided shaking up the samples as this would have disturbed the sludge and deposit in the samples which I shall refer to as B and C. One twentieth of a c.c. was added to nutrient gelatine which had been previously liquefied, and the water was thoroughly distributed in the cultivating medium. The liquefied gelatine was then poured out upon a sterilised glass plate and rolled out by means of a sterilised glass rod into an even layer. These plates were then transferred to sterilised glass dishes for protection from the bacteria in the air and kept at a temperature of about 20° C. for several days. The individual bacteria in the original sample of water are by this means distributed in the liquefied gelatine and when this sets each individual bacterium is fixed at one spot. Each bacterium multiplies rapidly by fission, giving rise to a colony which becomes visible to the naked eye or with the aid of a pocket lens, and by counting the number of colonies by means of a special apparatus we can estimate the number of bacteria present in a c.c. of the water sample—roughly speaking about 20 drops.

“I took note also of the general characters of the bacteria which were cultivated especially as regards the effect they produced upon the gelatine, and the formation of putrefactive odours.

“I also prepared cultures by using Petri's dishes, substituting agar-agar for gelatine, as organisms can then be grown at the temperature of the blood without the cultivating medium being liquefied. I also studied some of the most striking organisms by isolating them in pure cultures and by microscopical examination. The plate cultivations were

examined on the third and fifth days. I prefer the latter date for counting the colonies as they are then as a rule more easily visible, and this leads me to refer to one unavoidable objection to bacteriological examinations, viz., the time which must elapse before a report can be obtained. In studying these living microscopic plants, time must be given for their growth, and the rate of growth varies very considerably with different species.

"These samples (A, B, and C) were all examined by the methods I have described, and control experiments were made with drinking water in use in King's College.

"The plate cultivations and cultivations in Petri's dishes of samples A and B contained innumerable colonies, and on the fifth day the plates were completely liquefied.

"Colonies producing liquefaction showed themselves at a very early stage in large numbers, and there were numerous colonies of bacteria producing a green colour. On raising the dish which covered the plates the odour was extremely foetid. I can only compare the plate cultivations obtained from samples A and B with cultures prepared from sewage water, or from water intentionally mixed with faecal matter in the course of experiments upon the bacteria present in the excreta in health and disease. The numbers of colonies present could only roughly be estimated in millions.

"In sample C there were 118,000 bacteria to the c.c., with some odour of putrefaction on raising the dish cover, but this could not be compared with the extremely offensive odour generated by the cultures prepared from A and B.

"In the sample from the water in use at King's College there were less than 200 bacteria to the c.c.

"I could not use words strong enough in condemnation of the samples A and B. Such water if by chance contaminated with the germs of typhoid fever or Asiatic cholera would be a source of the gravest possible danger to the inhabitants of Worthing, and the only reason for hesitation in suggesting that such water might actually originate typhoid fever without contamination from a pre-existing case, is the uncertainty which still surrounds the question of the exact etiology of this disease.

"With regard to sample C the number of bacteria is far too high, containing as it does more bacteria than unfiltered Thames water in the worst month (December) and nearly as many as unfiltered water in the same month from the river Lea.

"Allowing for the excess of bacteria as in part the result of the time elapsing between taking the sample and its receipt and examination in London, I should strongly recommend that this water should be filtered before use for drinking purposes.

"In conclusion I would point out that we can only arrive at a just conclusion by taking all the evidence into account and that both the chemical and the bacteriological analysis must be considered side by side with the evidence obtained from the use of the water by the inhabitants of Worthing."

The above analysis shows that the public water supply during the middle of May was in a very foul state, and it strongly confirms what was before known by naked-eye examination, that not only was the tank in a filthy state, but that the water as it came from the new heading was very impure, for sample C was collected from the polluted source.

These three samples were examined after the outbreak had begun and with a full knowledge of the fever prevalence. It tells nothing of the presence of any typhoid bacillus, so it may be assumed that none was found, nor indeed does it give the names of any microbes, pathogenic or non-pathogenic.

It tells in no doubtful language that filth was present, but concerning the nature of the filth nothing is forthcoming.

On no other occasion was the tank found in a filthy condition.

In the early morning of May 15th, I went round in company with Mr. C. T. Gardner to examine several hydrants in the town, at a time when the pressure in the water mains was low.

In each case we found evidence of a most dirty condition of the hydrants, and no one who saw their condition before they were flushed out could fail to realise that the public service supply of water had somehow become seriously contaminated. Preparations were at once made to empty and clean out the reservoir, and treat the interior with hot limewash; this work was done on the night of May 15-16.

Attempts were also made to change the whole of the water in the mains by opening the hydrants, but this was not an easy thing to do, and although day after day flushing went on, it did not cause an efficient cleansing. The interior of many of the old pipes was rough and irregular, so that the ordinary flow of water did not detach adhering particles. There were several empty houses, and the water pipes supplying the cisterns must have contained impure water, which, when the pressure in the mains was low, flowed back again a short distance. There were hundreds of hydrants and sluice valves which also could not be effectually cleansed by flushing.

In addition, there were over forty dead ends in various parts of the town, many of them being several yards in length. Most of these dead ends had a hydrant box attached to them, which could be opened when occasion required; fifteen of them had no such ending, so that unless the ground were opened, and the pipe cut across, it could not be cleansed by flushing. When the number of new cases began to diminish in number towards the end of May, the number of men engaged in flushing was reduced, and the full significance of this danger was hardly sufficiently appreciated.

By the middle of July, hydrants were put on the remaining 15 dead ends, and they were all frequently opened and flushed. As late as June 21st this had not been done, for on that day a water main was laid bare in the New Steyne Road, the end of which was 17 feet from the nearest hydrant, and when the pipe was cut across it was found to be full of filthy water.

All these conditions prevented the due cleansing of the interior of the water mains by any extra flushing.

The tank or reservoir could be washed out, but there still remained more or less stagnant and fouled water in the pipes which could not be removed. Such limited areas would give plenty of opportunity for the development of any microbes which at any time when the pressure was altered might flow back into the larger pipes, and keep up pollution for a prolonged period.

The water in the suspected well C had much improved by June 5th, for millions of gallons must have been pumped out of it since May 22nd, when it was in a filthy condition. On June 5th two samples were taken from the bottom of well C at the same hour, and sent to King's College at once. One sample was examined bacteriologically by Professor Crookshank, and the other was examined chemically by Professor Thomson and Mr. Jackson.

By each observer excellent results were obtained and the water from each point of view was regarded as very pure.

I give here each report in full.

BACTERIOLOGICAL REPORT.

"This sample is described as having been taken at Worthing from the bottom of a well 72 feet deep. It was received in London about four hours afterwards and the examination commenced at once.

"Several plate cultivations were made and the colonies have been studied by microscopical examination.

"A sample of London water was examined under similar conditions.

"The Worthing well water produced 22 colonies for every 0.1 c.c. of the sample examined, that is to say there were 220 bacteria in a c.c. of these, 10 were colonies which liquefied the gelatine.

"The colonies were found, on microscopical examination, to be almost entirely the result of the growth of a common non-liquefying bacterium, and all were harmless microbes, occasionally present in the purest water.

"The sample of London drinking water examined simultaneously contained 1,500 colonies of bacteria in the c.c.

"I shall forward in the course of a few days photographs of these cultivations in illustration of the results of the examination.

"The water sample of June 5th, 1893, ranks from the bacteriological analysis in my opinion as very pure water, and it stands in marked contrast to previous samples which gave unquestionable evidence of contamination by filth."

CHEMICAL REPORT.

"The water was clear and colourless, and free from unpleasant taste and smell. It was fully aerated. The residue obtained by evaporating the water was only slightly darkened on heating, and rapidly regained its white appearance.

"No smell was perceptible during the heating.

“The results of the analysis are as follows :—

Total solid residue	.. .. .	29 grs. per gall.
Hardness, by Clark's test	.. .. .	19 degrees.
Total calcium, expressed as calcium carbonate	..	18·26 grs. per gail.
Chlorine	.. .. .	2·9 ” ”
Poisonous metals	.. .. .	None.

	Pts. per million.	Grs. per gall.
Free ammonia	·018	·00126.
Albumenoid ammonia	·034	·00238.
Nitrates, expressed as nitric acid	..	1·26.
Nitrates.	..	traces.
Oxygen consumed from permanganate in 6 hrs. at 80° fahr.		·14.

“From the results there is no evidence that the sample is anything but one of average purity. The hardness is high, as may be seen from the quantity of calcium present.

“The nitrates are a little high, but this is frequently found in chalk waters of acknowledged purity.

“On the whole the chemical analysis of the sample sent does not point to the water being unfit for drinking purposes.”

This analysis corresponds very closely with those made by Dr. Dupré in the early part of May.

These favourable reports, together with the rapid diminution in the number of new cases notified, led most persons to consider that the outbreak was at an end. Probably many persons then ceased to boil water for a time as they considered themselves secure.

It appears, however, from an analysis made by Mr. F. A. Anderson, B.Sc., F.I.C., that the water in some of the pipes on June 9th was polluted, but this fact did not come to my knowledge until many months later. He received a sample of water drawn from a house near the centre of the town and situated in a street where there had been some cases of fever.

This sample was taken four days after the one which had been drawn from well C, and which was found by Dr. Crookshank to be pure.

The report somewhat confirms the view put forward above that the water in the pipes was still impure.

Mr. Anderson writes :—

“I obtained after three successive cultivations in beef peptone broth containing 0·75 per mille of carbolic acid a bacillus which had the following characteristics :—

“1. Multiplies with extreme rapidity in beef peptone broth, either plain or containing 0·75 per mille of carbolic acid, the broth becoming turbid in from 10 to 14 hours after infection at the temperature of 22° C. The broth does not develop a scum upon its surface, but a deposit forms at the bottom of the test-tube.

" 2. Examined under the microscope, the bacillus has the following forms :—

" (a) When grown in carbolized broth ; diplococci or short diplobacilli ; some rods also observed.

" (b) When grown in plain broth ; rods of various lengths, rounded at the ends, the shorter ones sometimes constricted in the middle ; in a fresh preparation they are in very active movement. A few longer filaments were also observed, but their significance is doubtful.

" 3. Upon potato develops a colourless or slightly yellow growth after a few hours incubation at 37°C.

" 4. Upon gelatine (plate culture) the colonies are circular, non-liquefying, whitish, thick, and opaque.

" *Conclusions.*—There is no doubt that the organism obtained is either the bacillus typhosus or the bacillus coli communis. The gelatine plate culture after three days had only developed colonies of one kind excluding one or two tufts of mucor or a similar mould, which very often appear, and are due to unavoidable air contamination during pouring. These colonies seem to agree more with bacillus coli communis than with bacillus typhosus.

" The discrimination of these two microbes is at present the most difficult problem in practical Bacteriology, so much so that many authorities regard them as identical or of identical origin.

" The occurrence of either form is very strong proof of contamination with fecal matter, and the coli communis is as valuable in this connection as the typhosus."

CONCLUSIONS.

The one fact which stands out clear and distinct above all others in the course of events which occurred prior to the epidemic, is to be found in the driving of the new heading some fifty feet or more beneath any old drain or sewer.

In connection with this work there is the undoubted fact that the water in this heading, before the fissure was reached on April 14th, was subject to fecal pollution.

That this polluted water did enter the public mains, and that it was also pumped up into the reservoir with a considerable quantity of dirty chalky ooze.

That from the middle to the end of April, before as yet the epidemic had declared itself, there was a large amount of diarrhoea among persons of all ages and both sexes in Worthing.

That from that time onwards until the second week of June there was marked prevalence of enteric fever in Worthing and Broadwater due to polluted water.

That in consequence of the cleansing of the reservoir and the flushing of the water mains, the public water supply had so far improved that a lull appeared in the number of fresh cases. That when

this lull occurred, and, in fact, when the cases at the end of May diminished in frequency, there was a partial cessation in the practice of flushing.

That no amount of flushing could effectually cleanse the water mains, because the numerous dead ends, the service pipes to empty houses, and the street hydrants and valves afforded facilities for the reception of foul water, which, when the pressure was removed, partially flowed into the purer main stream.

That the reservoir although cleaned out on May 15th and 16th, still received polluted water after that date, and gave an opportunity for the growth of pathogenic microbes which under conditions of rest and temperature may develop, as is well known, with enormous rapidity.

That this growth was rendered the more easy by the extreme heat in the middle of June, which raised the earth temperature to 70° F. or equal to 21° C., and the air temperature to 80° F. and upwards.

The second part of the epidemic was not a fresh outbreak, but an extension and development of the first part, under conditions which proved highly favourable to the formation of organisms which were potent for harm.

ACTION TAKEN BY THE SANITARY AUTHORITY.

At a special meeting of the Sanitary Committee on May 15th, the following recommendations were made and adopted :—

To empty, cleanse, and hot limewash the reservoir on top of the water tower.

To cleanse and flush out the water mains, hydrants, and dead ends of the mains.

To flush the house drains and sewers.

To give public notice to the inhabitants to boil all water and milk previous to use.

To disinfect the excreta of infected patients.

To provide hospital accommodation, and nurses to attend the sick.

To submit samples of water to bacteriological analysis.

The Sanitary Committee at once adopted my recommendations but it must be borne in mind that they were not responsible for the construction of the new heading, or for the management of the water-works; all new works of water supply or sewerage are carried out by a different Committee.

Similar action was also taken by the East Preston Rural Authority. Disinfectants were distributed gratuitously, and a sum of nearly £450 was expended. At the end of August this practice was discontinued, and only the hospitals were thereafter supplied.

The nursing and the hospital accommodation are given in more detail hereafter.

A diver was employed on July 29th in a vain attempt to stop the fissure in the new heading; and on August 23rd two very strong and experienced divers were also unsuccessful, as the force of the water was too great.

EXTENSION OF THE EPIDEMIC TO WEST WORTHING AND WEST TARRING.

But when the epidemic had spent its chief force in Worthing, there was a further extension of the disease in West Worthing and West Tarring, places which up to that date had hardly been affected.

The few cases which had been met with in these areas could be accounted for either by having been imported into the districts from Worthing, or they were amongst those persons who had had various opportunities of drinking unboiled water in Worthing.

On July 30th, one case was notified in West Tarring, on August 2nd, two more cases, and on August 4th, four. In the week ending August 11th, sixteen cases, in the week ending August 18th, nine cases, and in the week ending August 25th, six cases were notified; the number then rapidly decreased, there being only one more on August 30th, two in September, four in October, and two in November.

In West Worthing there was a similar experience. On August 3rd three cases were notified, and three more on August 4th.

In the week ending August 11th, twenty cases, in the week ending August 18th, seven cases were notified; in the next four weeks there were respectively, three, three, four, and three cases; in the second half of September there were two cases, in October one, and in November three cases.

Looking at the dates of attack it will be seen that the new outbreak began at West Tarring on July 24th, and at West Worthing on July 27th.

Charts 7 and 8, and tables I. and II. give the particulars of this outbreak. Here again neither the milk supply nor the sewerage arrangements afforded any clue as to the cause.

The only thing in common to these two areas was the water supply, which in each case is derived from the two wells of the West Worthing Waterworks Company.

A similar outbreak, but on a smaller scale, was recorded in my annual report for 1892, where it was shown that the cause of the disease was due to pollution of the water in the mains by means of defective hydrants.

West Tarring lies north of the West Ward, and it is separated from it by the Brighton Railway. Just north of the railway, a small suburb of new houses has sprung up within the last seven or eight years.

These houses drain into a sewer which connects with the Worthing system, and this is quite distinct from the sewerage system in the West Ward. The water supply to this new suburb is altogether from the West Worthing Waterworks Company, and this is the only point in common between the West Ward and West Tarring.

If now the cases of disease in these two places owned a common origin, suspicion must fall on the water supply. But it can be shown that the water, as supplied from the waterworks, was of exceptional

quality, and therefore there remained the possibility of subsequent contamination, *i.e.*, some source of pollution on its way from the pumping station to the dwelling house.

The general conformation of the ground is such that a ridge of slight elevation runs from east to west parallel to and south of the railway; it runs from Park Crescent on the east to St. Ronan's on the west. Nearly all the houses in the West Ward lie to the south of this gentle slope. All the houses in West Tarring lie to the north of it.

The waterworks are near Heene Terrace, and therefore they are on the southern side. The water mains follow the contour of the surface, so that they rise about sixteen feet when they reach the ridge, and passing over it, they decline slightly as they extend northwards. Upon the course of the mains numerous hydrants are attached. Each hydrant is fixed in a box and covered with an iron lid furnished with a keyhole, and placed so that the upper surface is level with the road. The hydrant consists of a short length of iron pipe connecting with the main below, and closed by a ball of ebonite which, when the pressure of water is sufficient, is forced against a flange of india-rubber, and so the escape of water is prevented.

This is true so long as there is enough pressure in the pipes, but when the pressure is removed the ball drops down, and then any impurities in the box can pass readily into the main and pollute the water supply. The system adopted in the West Ward is an intermittent, and not a constant one. During the long interval between 5 p.m. of one day and 6 a.m. of the next day, the water in the mains is changing its position.

From the top of the ridge it flows backwards in a southerly direction towards the waterworks, and it flows in a northerly direction towards Tarring on the other side. Thus there are long lines of mains which are empty of water for some hours, and then there is a chance of various impurities entering through the hydrants.

Chart 15 explains the position of affairs. I examined in 1892, and again in 1893, several of these hydrants between 5.30 a.m. and 6.30 a.m., *i.e.*, before the morning pumping had begun, and have found the ball down in every hydrant but three on the mains south of the ridge. The three which contained water were full because they lay lower than the rest, and the water could not get away.

All the water in the mains in the early hours of the morning is water which has been pumped into them the previous day. Many of the boxes were clean, but many were more than half filled up with dirty mud or silt, which had washed into them off the roads; often the ebonite balls were covered with dirt. It is obvious that any surface or road filth may thus enter the mains in wet weather, and a person may drink impure water which has been fouled at a distant point.

In dry or frosty weather it is most likely that nothing injurious can enter the pipes, but in wet weather, or when the frost breaks up, there is a certainty that dirty water enters. At West Tarring the condition of Beckett and St. Dunstan's Roads in 1892 was very bad, and for weeks pools of stagnant water were met with. A similar condition of things was seen at Thorn's Terrace, which lies close to Milton Street, Brunswick Road, and the Parade. Part of Mill Road and Belsize

Road has never been taken over by the authority, and the hydrants in all these roads are especially liable to pollution.

In West Tarring the fever only appeared in that portion of the village which lies immediately north of the railway and amongst houses of recent construction. These houses were all drained into the Worthing system of sewers and they obtained their water supply from the West Worthing main which was laid through this area in 1888. Those who lived in the older houses with their shallow wells and more primitive arrangements for the disposal of sewage escaped altogether.

During the year 1892 steps were taken to alter the defective hydrants in West Tarring to others of a more modern pattern, and so made and laid that surface water could not enter the mains. Thus before the summer of 1893 the rural sanitary authority had so far safeguarded the area under their control, but they had no power over the West Worthing area where pollution might still occur, but where nothing had been done to obviate the danger.

In West Worthing the houses in which the fever appeared in 1892, and again in 1893, were mostly those where the water in the mains ran back to its lowest level at night time, *i.e.*, when there was no pumping going on at the waterworks, and when, therefore, nearly all the water mains were empty.

Taking the ridge that runs from east to west as a central line, it may be said that the water remaining in the mains at the end of a day's pumping separated into two portions: one running north to the newly built portion of West Tarring, the other south to the houses in West Worthing which are near the sea.

Between these two places there was a large area in which the water pipes were empty during the hours in which there was no pumping. In the two areas in which water could still be found, such water must be for several hours in a somewhat stagnant condition, and as it ran back from the higher levels, it may have brought with it any impurities that could have entered it at various and distant points.

Chart 15 shows in a graphic form the ball hydrants under pressure and without pressure; on the right an enlarged section of a ball hydrant is drawn; the left half is shown filled with dirt and debris, while the right half is clear.

When, on July 17th, the West Worthing water was used to supply drinking water to Worthing, it was thought advisable to water the streets in West Worthing with Worthing water, so as to economise the supply, but no street in West Tarring was watered with Worthing water.

There was no street watering with West Worthing water from July 25th to August 8th, but, so far as my memory serves me, there was some partial street watering in West Worthing with Worthing water in the period July 18th—25th; this, however, is not now capable of proof. Unless the infective material entered the defective hydrants, and so gained access to the water supply, it is not clear how West Tarring could have been invaded at the same time.

The water, as it came from the West Worthing wells, was good, as shown by chemical analysis, and bacteriological examination gave negative results.

TEMPORARY SUPPLY OF WATER.

On July 17th, it was resolved to place in various parts of the town large galvanized iron tanks which could be filled with wholesome water from the West Worthing Waterworks, for the use of the public. The work was at once put in hand, and in a few days, about one hundred such tanks were distributed at convenient points throughout the town.

Each tank held either 100 or 150 gallons of water, and was raised on bricks about 18 inches above the pavement ; a tap was provided to each, and a wooden cover fastened down by an iron bar.

Ten large water vans were obtained and were constantly engaged in this distribution of water. The vans were cleansed with boiling water before they were used for this purpose. The tanks were cleaned out at regular intervals.

This plan was found to be of great value, as every householder could obtain enough water for drinking purposes either by going to the nearest tank, or by drawing some from the van as it passed through the street.

The plan was also an economical one for the poor who were thus saved the necessity of boiling any water. During the very hot weather they were enabled to live in a cooler atmosphere, as there was no need for a fire in their small living rooms.

TEMPORARY WATER SUPPLY FROM BROADWATER.

In the meantime other steps were being taken to provide a good supply of water from the Chalk Downs at Broadwater, so that enough might be obtained to enable the old waterworks to be closed. A well was sunk in the chalk at the foot of the Downs, about a mile to the north of the town, on land in the possession of Mr. Harrison, of Lyon's Farm, who gave permission for this to be done free of any charge. To Alderman Cortis is due the credit of carrying out the idea, and the first bore was made by him at his own cost. When plenty of water was found, a second bore was made so as to increase the quantity, and mains were rapidly laid down from this new source to a spot in High Street, close to the old waterworks. Temporary engines were put up at Broadwater, and eventually a yield of about 600,000 gallons a day was obtained. On September 4th, the work was so far advanced that a hydrant could be placed on the High Street end of the new mains, and from this date five out of the ten water vans were filled from this source, the other five still obtaining water for some weeks longer from the West Worthing wells.

By September 22nd, the new temporary mains were joined on to the old mains, and a branch was also supplied to the reservoir on the top of the water tower. At 1.45 p.m. on September 22nd, the engine at the old waterworks was stopped, and from that date, no water has been pumped from any of the three wells, A, B, and C. The reservoir was to have been cleansed again before this new supply was admitted, but this was not done until September 27th, when about twenty men were employed in cleaning and limewashing the interior of the reservoir.

A reference again to table I. or to chart 4 will show that after September 15th there was a marked decline in the number of persons

attacked, and this was no doubt due in a great measure to the improved water supply. It is also to be observed that there was a slight but distinct rise in the number of attacks during the fortnight just preceding September 15th, and this in spite of the fact that at the time the town was very empty, as large numbers of families had left for a time. I think that this subsidiary rise was mainly due to the infectious nature of the disease, as many of these cases were in small houses, and inmate after inmate was attacked, so that the fever lingered in some dwellings for a period of several weeks.

There was throughout the epidemic ample evidence of the infective nature of enteric fever.

The full benefit of the new Broadwater supply was not felt until after September 27th, and even then there remained the question whether the mains themselves were in a clean state, and whether the new water might not become polluted, even in a minor degree, by the old pipes.

The question was answered by steady diminution in the number of fresh cases, and of those which were registered during October and November many occurred in houses where there had been previous cases of enteric fever. During this period the air and earth temperature was rather below the mean for the period.

The tanks and vans were still continued in use for many months, as it was not yet deemed safe to drink from any other source. The water after September 22nd was, for this purpose, wholly supplied from Broadwater, and no longer from West Worthing.

No chemical examination of the Broadwater supply was made, but several samples were taken for bacteriological analysis; in no case was the presence of any *bacillus typhosus* recorded.

I print these reports in full, because they not only give some results which may be of interest to others placed in like circumstances, but they also show the methods of procedure adopted in the course of the analysis.

On three different occasions samples were collected which are here called Series A, Series B, and Series C.

Series A consisted of two samples :—

I. The first was taken from the Worthing water mains, on November 29th; it was a mixture of water taken from nine houses in different streets where fever had been prevalent; each sample was drawn from a tap which came off directly from the main, and whence the water was allowed to run for a short time before the bottle was filled.

The nine samples mixed together in a clean stone jar, previously rinsed out with some of the water, formed a fair specimen of the drinking water at that date. At this time more than two months had elapsed since the polluted well C had been closed, and during the interval nothing but water from the temporary supply at Broadwater had passed through the reservoir or the mains. It ought, however, to be stated that on October 22nd freshly slaked lime was put in the reservoir, so as to produce a large quantity of lime water, which was passed through the mains in the course of the next day or two; this happened more than five weeks previous to the taking of the above samples.

The second sample was taken from the temporary water supply at Broadwater early on November 30th; it was collected in a clean stone jar previously rinsed out with some of the water.

On each sample Dr. Klein thus reports:—

“The two samples arrived in stone jars securely sealed; they were labelled:

“I. Sample of water taken from the Worthing water mains, this afternoon (November 29), between 3.30 and 5 p.m.

“II. Sample of water from the Broadwater temporary water supply, taken at 8 a.m. this morning (November 30).

“They arrived in the afternoon of November 30, and forthwith the following experiments were made:—

“Of each sample, after shaking well the contents of the jar, a measured quantity was taken and used for plate cultivation, in order to ascertain approximately the number of microbes present in the water and capable of growing in gelatine at a temperature of 20° C., that is, the temperature at which the plates are kept in the incubator. In order to get as near as possible the number of microbes present, two plates were made of each sample with .1 c.c., and two with .25 c.c., so that four plates were available of each sample. By this it was found that the number of microbes (growing on gelatine at 20° C.) was about the same in both samples I. and II. This number was, however, unexpectedly great, since a calculation based on the four plates for each sample yielded between 40,000 (forty thousand) and 50,000 (fifty thousand) microbes per each cubic centimetre of the water; this, it must be confessed, is a very large number of microbes for drinking water.

“A difference, which came out in these plate cultivations, existing between sample I. and II. is this:

“Sample one (I.) contained a large number of microbes liquefying the gelatine, whereas sample II. contained few liquefying organisms; in sample I. the number of liquefying microbes per 1 c.c. is about 10,000-12,000 whereas in sample II. the number of liquefying microbes is only 60 to 80 per 1 c.c.

“The liquefying microbes were found to be chiefly:—(a) *bacillus fluorescens liquescens*, common in most waters.

“Amongst the non-liquefying microbes a good many colonies were of the nature of micrococci, others of the nature of bacilli. Amongst these, those that are motile deserve the chief attention, because amongst the motile non-liquefying bacilli, which from their derivation would at once place the water under suspicion of unwholesomeness, the *bacillus coli* and the *bacillus* of typhoid, deserve the first importance. I have consequently tested in this direction, by subculture in the different media, a large number of the colonies from those plates, that is to say, making subcultures from the non-liquefying colonies of bacilli, which as regards size and aspect might be compared with the *bacillus coli* or *bacillus* of typhoid, but the subcultures yielded negative results. The growths which made their appearance in these subcultures were wanting in

some of the essential features by which either of those species could be identified. The conclusion therefore is justified that none of the non-liquefying colonies present in those plates were either *bacillus coli* or *bacillus of typhoid*.

“ It must be obvious to anyone who has carefully considered the nature of water pollution, that if in any instance an undesirable pollution—say with human or animal excremental matter—does occur, the number of undesired or injurious microbes must, as a rule, owing to the amount of dilution, be comparatively very small, and therefore any attempt to discover these microbes in the water by the ordinary methods of making plate cultivations with small quantities of the water must needs lead to negative results. It is therefore necessary to use for the cultivations large volumes of the water.

“ But here we are at once confronted with this difficulty ; supposing a large number of microbes are present in a given water—in the above samples there are present between 40,000 and 50,000 per 1 c.c.—it is clear that it is impossible to discover in the plates made with a small quantity of the water, as is usual, a particular microbe, if this be present only in comparatively very small numbers, say for instance, one of this kind of microbe in one cubic centimetre of the water. It is therefore necessary to search through a large bulk of water and this has been done in the present instance in the following manner.

“ Sixteen hundred cubic centimetres, or a little over half the total quantity sent of the water of each sample, are driven through a sterile Berkfeld filter ; by this means the whole, or nearly the whole, of the particulate matter suspended in the water is intercepted on the outer surface of the filter ; this superficial layer is then carefully brushed off with a sterile brush into, and distributed in, 10 c.c. of sterile water, and of this distribution 1 c.c. was used for each culture tube and each culture plate, so that each tube and each plate received the particulate matter of 160 (one hundred and sixty) c.c. of the original water. Experience teaches that if to each tube or each plate, from a 5 per cent. solution of absolute phenol (carbolic acid), so much is added as to amount to 1 c.c. (of this 5 per cent. solution) per 100 c.c. of the culture medium, the growth of many microbes becomes greatly retarded or altogether inhibited ; but this medication has no injurious effect on the growth of either the *bacillus coli* or the *bacillus of typhoid*. Consequently, while many of the microbes—particularly the non-liquefying micrococci—are practically excluded, while others—the liquefying *bacillus fluorescens* and *proteus*—are greatly retarded, if there be any *bacillus coli* or *bacillus of typhoid* present, these have a chance of showing growth in the medicated medium. To show to what enormous extent the above addition of the phenol to the plates represses the growth of the microbes present in the original water, the following may serve as an illustration ; as stated above, 1 c.c. of the water sample II. contains between 40,000 and 50,000 microbes, amongst these 10-50 liquefying ones ; now, a plate in the above medicated condition inoculated with the particulate matter of 160 c.c. (see above filtration) yielded about 4,000 (four thousand) colonies, none were liquefying, whereas 160 c.c. of the original water ought to yield between six and eight millions of colonies, and amongst these between nine thousand and twelve thousand liquefying ones.

As stated above, the growth of the bacillus coli and bacillus of typhoid is not retarded or inhibited by the above addition of phenol to the culture medium, and I have therefore searched amongst the colonies that made their appearance in the medicated culture-media (each inoculated with the particulate matter of 160 c.c. of the original water) for colonies that in some way or other resembled those of either of the two species, but have not been able to discover any. Colonies which in aspect, in the size and shape of the bacilli constituting them, had a distant resemblance to the bacillus coli or the typhoid bacillus respectively, were subjected to subcultures; the growth that appeared in these did not show the fundamental characters by which either of these species could be identified."

Series B consisted of four samples taken in the afternoon of December 7th; each sample was taken as in series A.

No. 1 was from the reservoir on the top of the water tower.

No. 3 was from a house in Brunswick Road, supplied from the West Worthing Waterworks.

No. 4 was from a house in Montague Street, Central Ward, where there had been several fever cases.

No. 6 was from a cottage in Ham Lane, at the east-end of the borough.

Nos. 1, 4, and 6 were obtained from the Broadwater supply; Nos. 4 and 6 being drawn from the mains, while No. 1 was drawn from the reservoir, where the water may have been quiescent for a time.

No. 3 was from the independent supply at West Worthing. The precise spots whence these waters were taken were unknown to Dr. Klein. This difference of source explains the differences in the analytical results. No. 1 contains more microbes than the rest, because they had time and opportunity to develop there. The analysis of Nos. 4 and 6 are similar, and they all differ from No. 3, which came from a different source. The results are again negative as regards bacillus coli or bacillus typhosus.

I now give Dr. Klein's report on Series B.

"These four samples of water, labelled 1, 3, 4, and 6 respectively, were delivered here in sealed jars in the afternoon of December 8th. In the description of their source it is stated that 'They were taken from the Worthing water mains, between the hours of 3.15 and 4.30 p.m., on Thursday the 7th.'

"All four samples were subjected to bacterioscopic examination on precisely the same lines as described in my former report to you, and therefore need not again be stated.

"Sample 1 contained 8,800 microbes per 1 c.c., amongst these, 150 liquefying ones.

"Sample 3 contained 230 microbes per 1 c.c., amongst them, 50 liquefying.

"Sample 4 contained 600 microbes per 1 c.c., amongst them, 10 liquefying.

"Sample 6 contained 600 microbes per 1 c.c., amongst them no liquefying ones.

"Of sample 1 several suspicious looking colonies made their appearance in the plates, but on further examination by subcultures none of these presented the characters either of the bacillus coli or the typhoid bacillus.

"Of sample 3 one suspicious looking colony, which in subcultures did not present the characters of bacillus coli or bacillus typhosus.

"Of sample 4 and sample 6 two suspicious colonies in each were noticed, but they were not bacillus coli or bacillus typhosus, although it ought to be stated that these suspicious looking colonies in sample 4 and sample 6 were of a different character from those noticed in samples 1 and 3.

"These colonies of sample 4 and sample 6 had several characters in common with the true typhoid bacillus, but in other respects they differed from this latter; thus the suspicious looking colonies of samples 4 and 6 resembled the typhoid bacillus in their great motility, in size, in the inability to form gas bubbles in the depth of gelatine, in the aspect of the growth on gelatine on the surface and in the depth, in the slow growth and in the inability to curdle milk, but they differed from the typhoid bacillus in their not forming threads and chains, and in not growing well at higher temperatures (37° C.).

"On the whole I think I am justified in regarding the bacilli of samples 4 and 6 as not being the typhoid bacillus.

"I am unable to indicate why samples 4 and 6 should be different from 1 and 3, seeing that they were all derived from the water mains, but it is a fact that marked difference exists between sample 1 and the other three as regards the number of microbes present, and between 1 and 3 on the one hand, and 4 and 6 on the other as regards the character of the microbes."

The analyses of Series A and B did not seem to justify one in advising the public to leave off boiling the water, although numbers doubtless did no longer continue the practice; nor could one recommend the disuse of the street tanks and water vans, as there was still the danger arising from the mains not being yet free from pathogenic microbes.

Series C.—A third time the water was analysed but under altered conditions. On previous occasions each stone jar was new, clean and rinsed out with the water to be analysed. This time I sterilised the jars first by placing them, on January 29th, 1894, in an oven from 6.30 a.m. to 8 a.m., where they were exposed to a temperature of

160° F.-180° F. for nearly an hour-and-a-half. Each jar was of course one which had never been previously used. When the jars became quite cool, each was filled with water from one of the four sources mentioned below, and sent off at once. Water D had not been stored in a reservoir.

Dr. Klein sent the following report :—

“The four samples of water delivered on January 29th, were each contained in a jar well sealed, their description was :—

- Sample A. From Broadwater Waterworks (Temporary Supply).
- „ B. From Town Reservoir of same water.
- „ C. From centre of Town (Ellesmere, Gratwicke Road).
- „ D. From Mains of West Worthing Water Company.

“All four samples had been collected in the morning of the same day, viz., on January 29th.

“The examination was carried out on precisely the same lines as those described in my former two reports, viz.:—

“I. Gelatine plates were made of the unfiltered water in order to ascertain approximately the number of microbes present per 1 c.c. of the water, and

“II. 1,600 c.c. of each sample were driven through a Berkfeld filter; after the conclusion of the filtering, the outside of the filter was brushed off, and this was used in definite amount for phenolated plates. Amongst the colonies that came up those that presented a similarity in aspect to the bacillus coli or typhoid were picked out and further examined by subcultures.

“1. It was ascertained that water A contained 68 microbes per 1 c.c., so that this water is of greater purity than when first examined; it ought to be stated at the same time that as regards the bare number of microbes per 1 c.c., this water comes within the admitted character of a good water, 100 microbes per 1 c.c. being the upper limit.

“Water B contained 912 microbes per 1 c.c., this proves, what has been repeatedly observed, viz., that by storing water the microbes present increase in number. Water B being the same as water A as to origin, but water B being taken from the reservoir, it follows that herein the microbes have multiplied fourteen-fold.

“Water C contained 164 microbes per 1 c.c., and water D contained 196 microbes per 1 c.c., that is to say, this West Worthing water (D) taken from the mains contained considerably more bacteria than that of the Broadwater Waterworks. But in order to satisfactorily compare the two waters it would be necessary for me to know whether this water D had been like water A, stored in a reservoir; if so, then the comparison ought to be made between water C and water D, in this case also water D is as regards numbers inferior

to water C ; if however water D has not been stored previously then its comparison should be made rather with water A, in this case water D is considerably inferior to water A.

“ 2. A considerable number of the colonies of the phenolated plates of all four samples was examined in subcultures, but none presented the fundamental cultural characters exhibited by the bacillus coli or the bacillus of typhoid fever, and I think it is justifiable to conclude that these two species were not present in 1,600 c.c. of either of the four samples.”

This report is far more favourable than the preceding ones ; it seems to me that the fairest way to obtain a good idea of the quality of a water is to cleanse the jar thoroughly by heat before using it for the collection of a sample.

In Series C as in Series B the storage of water increased the number of microbes present.

From this time onwards the water has been used freely, although many still make it a practice always to boil their drinking water.

The water vans ceased to run on February 7th, and the street tanks were removed on the same day.

The total absence of any fresh attacks of enteric fever for a period of six weeks was after all the best test that could be applied to show the wholesomeness of the Broadwater supply.

HOSPITAL ACCOMMODATION.

As there is no hospital in the Borough for infectious cases, the Worthing Infirmary Committee placed nine beds at the disposal of the Corporation for the reception of enteric fever patients on May 16th, and next day two hospital tents were ordered from Piggott, Brothers, and Co. ; on May 19th they were erected in the course of a few hours, and on the evening of that day two patients were admitted into them.

Each tent, or marquee, was 30ft. by 16ft., capable of receiving eight patients, and furnished with double roof and walls made of un-inflammable material, &c. Each tent in its complete state with floor and furniture cost £79 18s.

These tents were placed on a lawn in front of the Infirmary, and about 30 yards to the south. They answered their purpose very well, but they were found to be very hot within, even when free openings were made for admitting fresh air by lowering the side walls. Some benefit was found by syringing water over the outer roof, by which the temperature could be lowered four or five degrees.

The weather being so hot, the patients were practically lying in the open air all day, and no closeness was observable within, except in the

early morning before the tents were fully opened. Extra nurses were obtained who were placed under the Infirmary Matron, and the Infirmary itself was used as the administrative block, where all cooking, washing, &c., were done.

The Infirmary and the tents were only made use of in the first part of the epidemic, except for two cases which afterwards occurred amongst those connected with the staff, and which were admitted into the Infirmary.

The tent for males was closed on July 11th, and the tent for females was closed on July 21st ; any patients remaining were then removed into the Infirmary.

When the outbreak appeared again in July it was clear that more hospital accommodation was needed. For private or for Corporation cases three hospitals were opened, Richmond House on July 7th, the Traveller's Rest on July 17th, and Mr. Ralli's private hospital on July 26th. For parish cases, three other hospitals were also provided, Newland Road hospital on July 12th, Lyndhurst Road hospital on July 15th, and High Street hospital on July 18th.

These six buildings lent themselves readily for the purpose of conversion into a temporary hospital, and very little alteration was needed beyond clearing out the contents of a lodging house, a mission room, and a Chapel, and putting in the needful number of beds. In two buildings gas and water had to be laid on, but this was done in a few hours. The Lyndhurst Road Primitive Methodist Chapel was thus converted into a hospital within twelve hours, and 28 beds were ready to receive patients. Similar alacrity was shown in other cases, for every one worked hard in the midst of this emergency. In two or three days after each hospital was opened, all the beds were full, and for a time there was a great rush for admission. No doubt there was much overcrowding, but it was thought better to remove cases from their small cottages rather than leave them to infect the healthy who remained at home. Cubic space was of less importance, because the weather was dry and fine, so that the doors and windows could be left open all day and the patients were exposed to an ample supply of fresh air.

The following table shows the cases admitted into the hospitals the number who recovered, the number who died, and the deaths per cent. of admissions.

It also shows the number of patients in the Borough who were treated at their own homes.

In all, 228 beds were provided, and 431 patients were received ; in admitting cases, preference was given to persons from ten to thirty-five years of age, for not only was the disease most prevalent at those ages, but they were among a class of persons who were either engaged in shops or in service and who could not be well nursed at their place of residence.

HOSPITAL.	CASES.			RECOVERY.			DEATHS.			NO. OF BEDS.	DEATHS PER CENT. OF CASES.		
	M.	F.	TL.	M.	F.	TL.	M.	F.	TL.		M.	F.	TL.
Infirmary	11	16	27	7	12	19	4	4	8	15	36.36	25.00	29.63
Infirmary Tents	8	15	23	7	14	21	1	1	2	16	12.50	6.66	8.70
Richmond House	22	39	61	21	35	56	1	4	5	36	4.54	10.25	8.20
Traveller's Rest	48	43	91	40	31	71	8	12	20	65	16.66	27.91	21.98
Ralli Hospital	9	7	16	9	7	16	0	0	0	10	0.00	0.00	0.00
Newland Road	27	43	70	23	30	53	4	13	17	33	14.81	30.23	24.28
Lyndhurst Road	30	25	55	25	22	47	5	3	8	28	16.66	12.00	14.54
High Street	46	42	88	44	38	82	2	4	6	25	4.35	9.52	6.82
HOSPITAL PATIENTS	201	230	431	176	189	365	25	41	66	228	12.43	17.83	15.31
PATIENTS TREATED AT HOME	418	470	888	373	411	784	45	59	104		10.76	12.55	11.71
TOTAL	619	700	1,319	549	600	1,149	70	100	170		11.30	14.28	12.89

The mortality was higher amongst those treated in hospital than amongst those treated at home. This was not because the worst cases were removed, the applications for admission came in too fast for any selection of cases, but it was greatly due in my opinion to the removal itself, whereby the patient was received in a more or less exhausted state. Experience has shown over and over again that in enteric fever nothing is more important than complete rest and quiet from the commencement of the attack ; no one can always tell in the early stage whether the disease is going to assume a severe form or not. Removal to the hospitals was a distinct benefit to the other inmates of the house, but it was not wholly an advantage to the individual removed.

Similar accommodation was provided in the two adjacent villages.

WEST TARRING.

The Reading Room was opened as a Hospital on July 14th, 1893, with accommodation for ten patients, and in this building 23 persons were treated. The Infant Schoolroom was opened as a Hospital on August 9th, 1893, and it was closed on September 12th, nine patients having been admitted.

Of these 32 patients, 6 died, so that the mortality was equal to 18·75 per cent. of those admitted.

The cost of each patient amounted to £15 5s.

BROADWATER.

The Reading Room in the village was converted into a hospital with two wards on the ground floor, and capable of holding ten patients. It was opened on July 20th and closed on September 20th, during which time 22 patients were admitted, of whom 13 came from the village, and 9 from the adjacent part of Worthing which lies north of the railway.

Six persons were admitted on July 20th and three more during the following three days ; five came in on August 2nd, and seven more up to August 16th, after which date the admissions ceased. Three of the patients died, so that the mortality in the hospital was equal to 13·63 per cent. of those admitted. The total cost, including every expense, amounted to £263 12s. 10d., so that the charge for each patient amounted to £12. This sum does not include the after treatment of those who were sent to a convalescent home.

There were altogether 42 persons attacked with fever in the village, and of these 9, or 21·43 per cent. died.

There were, in addition, the nine urban cases treated in the Temporary Hospital, and the total cost of these fifty-one persons amounted to £533, or an average cost for each patient of £10 9s. This sum includes the maintenance and treatment of the patients not only during the illness, but during the period of convalescence at a home where they were sent for change of air.

NURSING.

Early in the epidemic the Worthing District Nursing Association, at the request of the Worthing Corporation, undertook the nursing of the sick at their own homes. Extra nurses were engaged, and as their duties were arduous and the distances great, pony carriages were hired, so that the sick might be visited at least once, if not twice a day. This plan answered very well in the first part of the outbreak, but when there were such a large number to be treated towards the end of July, it was thought desirable to scatter the nurses through the town where each could have a defined district in which she resided for the time. It had always been the rule of the Association to lodge the nurses at some central house, whence they could visit as occasion required. When the sudden rush of cases came on in July this plan was not found to answer, as there was too much overlapping of areas, and too much time was spent in going from place to place. The hire of pony traps alone amounted to more than £250.

A Committee was appointed, at a meeting held on the 5th August, to organise a special branch of the Worthing District Nursing Association, for the purpose of providing for the nursing of the Poor Law and Corporation patients suffering from enteric fever.

Miss Hopper was appointed Superintendent by the Committee on August 8th, and the work commenced on Monday, August 14th, the Borough being divided into fourteen districts, and a nurse stationed in each district.

The Association having no funds available for this extra work, an agreement was made with the East Preston Board of Guardians, for a payment of four shillings per week or any part of a week, for each Poor Law patient, the Town Council undertaking to pay the balance of the expenses. This liability was soon after transferred to the Committee of the "Mayor's Relief Fund."

From the 14th August to the 23rd October the number of patients amounted to 390; on the latter date 313 were convalescent, three were transferred to private nurses, 14 removed to hospitals, and 47 were handed over to the regular district nurses.

As evidence of the skilful care and attention of the nurses, it may be stated that there were 13 deaths, and that the death-rate of those attended amounted only to $3\frac{1}{2}$ per cent.

The following were the number of patients on the register for each week, viz., August 20th, 279; August 27th, 241; September 3rd, 191; September 10th, 167; September 17th, 135; September 24th, 135; October 1st, 117; October 8th, 102; October 15th, 83; October 22nd, 64. The expenditure, deducting the amount paid for the women employed for night nursing, etc., amounted to £333 17s., which makes the average cost per patient per week slightly under 4s. 5d. Up to October 8th, the average cost was only about 4s. 0 $\frac{3}{4}$ d., the increase during the last two weeks was owing to the Committee being unable to reduce the staff of nurses in the same proportion as the patients became convalescent, the districts being so scattered.

The receipts and expenditure of this special branch are here given :—

1893	RECEIPTS.	£	s.	d.
August 19th. Worthing Corporation ...		44	8	5
August 22nd to October 18th. Guardians East Preston Union		92	3	0
August 24th to October 23rd. Committee, Sick Poor Fund		255	0	0
		£347	3	0

1893	EXPENDITURE.	£	s.	d.
Arrears paid to Institutions and Nurses for fees, travelling expenses, &c., by the Special Branch be- fore taking them over on August 14th		44	8	5
August 12th to October 25th. Fees to Nurses from August 12th to October 23rd ...		130	4	0
Board and Lodging ...		122	16	7
Laundry Expenses ...		12	13	0
Superintendent's Fees, Aug. 8th to Oct. 25th ...		23	2	0
Hire of Carriage, 10 weeks		21	0	0
Chemist's Account ...		9	17	4
Nurses' travelling expenses		10	3	1
Printing		0	16	9
Registers, Case Books, and Charts		1	13	5
Incidental expenses ...		1	10	10
Women for night nursing, &c....		13	6	0
		£347	3	0

COST OF THE EPIDEMIC.

I now give, as briefly as possible, under main heads, the cost which the epidemic entailed upon the ratepayers of the districts in which the fever appeared.

1.—BOROUGH OF WORTHING.

						£	s.	d.
Hospitals	..	..	..	..	..	3,742	18	4
Disinfectants, notification fees, &c.				..	..	683	1	1
Waterworks (temporary)			..	..	..	2,972	17	0
Water supply (temporary)			..	..	..	2,217	11	0
Other expenses	..	..	..	..	..	87	9	2

2.—EAST PRESTON UNION.

Union Common Fund	2,639	6	3
Rural Sanitary Authority	277	19	7
	<hr/>		
Total	£12,621	2	5

In addition to these sums, the cost of extra relief to the poor is estimated at not less than £1,500.

There were several large sums expended by the liberality of the public which if they had not been given, would have been defrayed out of the rates. Thus, Mr. G. A. Ralli provided a hospital for sixteen patients at a cost of £444. Thus, again, Broadwater treated its own sick poor from money subscribed almost wholly from persons resident in the parish. In this way £500 were raised by private subscription.

The following figures give in more detail the various items of expenditure.

BOROUGH OF WORTHING.

A detailed account of the expenditure incurred by the Worthing Corporation, consequent on the epidemic which occurred in the Borough during the year 1893 :—

	£	s.	d.	£	s.	d.
HOSPITALS—						
Rents of Buildings	493	2	4			
Medical assistance	581	0	0			
Wages and lodgings—Nurses	1,466	3	9			
Board of patients and nurses	1,339	18	2			
Drugs and medical appliances	190	19	6			
Tents, furniture, &c.	345	10	9			
Gas, coals, rates, and taxes	33	16	9			
Laundry work	162	2	8			
Hire conveyances of nurses and patients	298	9	7			
Stimulants	138	8	2			
Sundries	102	10	1			
	<hr/>					
	5,152	1	9			
Outstanding claims for rents and repairs, estimated at	98	0	0			
	<hr/>					
	5,250	1	9			
Less cash received for board, &c. of patients from East Preston Board of Guardians, &c. 1,462 3 5						
Sums due, estimated as recoverable 45 0 0						
	<hr/>			1,507	3	5
	<hr/>					
				3,742	18	4
Disinfectants used in hospitals, sewers, and private drains				447	17	7
Notification fees				139	12	6
Analysts' Fees, water from well, mains, temporary supply, &c.				95	11	0
				<hr/>		
				4,425	19	5
WATERWORKS—						
Well sinking and boring for new water supply	317	0	0			
Providing and laying watermains	1,794	7	11			
Purchase and hire of machinery	611	14	1			
Erecting temporary engine and boiler sheds	116	2	1			
Water fittings and works in connection therewith	133	12	11			
	<hr/>			2,972	17	0

WATER SUPPLY—

Water tanks and fittings	329	9	6	
Purchase of water for drinking, and flushing sewers	178	0	0	
Delivery of water for drinking purposes	864	1	6	
Extra labour for cleansing and flushing watermains	846	0	0	
	<hr/>			2,217 11 0
Costs incurred in attempts to shut off polluted water.				87 9 2
	<hr/>			£9,703 16 7

EAST PRESTON UNION.

The expenditure incurred by the East Preston Board of Guardians was on account of the three parochial hospitals in Worthing, the West Tarring Hospital, and for a nurse at Broadwater.

From July 12th to August 8th, all the parochial hospital expenses were defrayed by the Guardians; after that date an arrangement was made with the Worthing Corporation by which the Guardians paid according to a scale agreed upon by both parties.

The total amount paid out of the Union Common Fund up to August 8th was £941 16s. 11d., but of this sum the Worthing Corporation repaid £100 for furniture; after that date the charge on the Union Common Fund amounted to £1,797 9s. 4d., or a total cost of £2,639 6s. 3d.

The various items making up this expenditure are here set forth.

Charges defrayed from the Union Common Fund in connection with the Enteric Fever patients from July 12th to August 8th :—

	£	s.	d.
Furnishing	225	16	7
Nursing (wages, board, lodging, &c.) . .	364	9	6
Food	128	7	3
Stimulants			
Drugs	23	6	3
Washing	51	13	2
Maintenance of Hospitals	8	8	7
Fly Hire	36	9	0
Sundries	3	6	7
	<hr/>		
	£841	16	11

Charges defrayed from the Union Common Fund subsequent to August 8th :—

	£	s.	d.
Worthing Corporation for maintenance and nursing &c., of patients	1,253	11	7
Out-relief nursing	91	16	0
Medical Officers (extra assistance)	63	11	10
Relieving Officers (extra assistance)	37	13	1
Gratuities to Medical Officers	100	0	0
Rent of Newland Road Hospital	21	0	0
Rent of High Street Hospital	6	18	0
	<hr/>		
	1,574	10	6
Cost of a Nurse for Broadwater	34	0	0
Charges on account of West Tarring Hospital	181	18	10

Thus the total sum paid by the East Preston Guardians amounted to £2,639 6s. 3d. In addition, they paid, as the Rural Sanitary Authority, £277 19s. 7d. for the West Tarring Hospital, which thus cost altogether £466 18s. 5d. as a contribution from the public rates.

WEST TARRING.

The cost of the maintenance and treatment of the patients in West Tarring Hospital is here shown :—

	£	s.	d.
Furnishing	81	3	10
Nursing	155	11	2
Food and necessities	125	15	7
Stimulants	28	1	4
Drugs	27	9	6
Medical attendance	30	0	0
Washing, &c.	30	9	6
Cleansing and painting	10	0	0
	<hr/>		
	488	10	11
Less contribution from patients	21	12	6
	<hr/>		
Charges defrayed from public rates	£466	18	5

BROADWATER.

	£	s.	d.
Special Hospital Fund	263	12	10
Out-patients' Fund	90	15	3
	<hr/>		
	354	8	1
Home for convalescents	178	11	1
	<hr/>		
	£532	19	2

The sum of £34 was received from the East Preston Union Common Fund to pay for the services of a nurse; with this exception, the whole of the expenses in rural Broadwater were defrayed by public subscription; in addition, there were numerous gifts in kind which added greatly to the comfort of the patients.

MR. RALLI'S PRIVATE HOSPITAL.

	£	s.	d.
Rent	80	3	5
Nurses and ward maid	114	18	3
Housekeeping, coals, and gas	77	10	3
Furniture	43	3	2
Drugs and stimulants	38	15	5
Medical fees	69	0	0
Laundry	8	1	0
Convalescents	5	19	0
Stationery, cabs, telegrams, &c.	6	12	3
	<hr/>		
	£444	2	9

There were 16 patients treated between July 25th and October 17, and all were discharged convalescent.

The cost of each patient amounted to £27 15s.

The total amount raised for this hospital was £449 18s., and the balance of £5 15s. 3d. was, at the request of Mr. Ralli, handed over to the Provident and Poor Relief Society.

MAYOR'S RELIEF FUND.

The following report is an abstract of one published by the Committee of the Fund. It shows the large amount of liberality which the occasion brought forth, and the prudence with which the fund was managed. Not only were the sick poor assisted, but help was also given to those who suffered grievously through loss of business. The distribution of the fund shows a wide sympathy with human suffering.

The Committee was appointed on the 15th day of July, 1893, and for many weeks met daily.

The persons most particularly affected may be classified as follows :—Those in whose homes sickness prevailed, Lodging-house Keepers, Boatmen, Bath-chairmen, Small Fly Proprietors, Small Traders, and Labourers.

Efficient nursing was carried on by the District Nursing Association; the cost under this head was £310 4s. 1d., in addition to which the Committee provided, in several cases, Night Nurses for those who were unable to bear the cost, paying for the same £78 12s. 5d.

The class of Lodging-house Keepers caused the Committee the greatest anxiety, for above all others they had lost all source of income, they had no means of paying rent, rates, and taxes, and in many cases no means of obtaining food. The Committee saw that unless the rents, &c., could be met, they would be compelled to relinquish their homes or dispose of their furniture, the latter course practically rendering their homes unlettable; in either case the result would be that many would never again be able to obtain a living in almost the only way open to them. It was felt that to pay rents the action of the Committee might be misconstrued as diverting the fund into unintended channels, or in other words assisting landlords, but after anxious consideration, they decided to assist with rents in cases where landlords were willing to contribute a sum equal to that of the Committee

and signing an agreement not to interfere with the tenant before the summer of 1894, thus giving the tenant security of tenure and a chance of recovering from the depression. A large number of landlords gave 50 % and some more. By this means many tenants were relieved of all rent varying from three to six months and in some cases nine months. Under this head £2,002 1s. 4d. were expended, the landlords contributing an equal amount. The Committee feel the money could not have been better applied, and have the satisfaction of knowing their action is generally approved. Having saved their homes, and, where absolutely necessary, provided them with food and fuel, the Committee found it needful, in very many cases, to prevent furniture being sold, to pay rates and taxes; the amount expended under this head being £884 12s. 6d.

The class of small Fly Proprietors was also particularly affected. Their means of living practically ceased, and to many there appeared no alternative but to sell their horses; to obviate this, the Committee assisted their families and contributed towards keeping their horses through the winter.

The classes of Boatmen, Bath-chairmen, and small Traders were chiefly assisted with food and fuel by means of Relief Tickets, the total amount thereby expended being £1,084 18s.

The class of Labourers was more particularly affected by being out of employment in consequence of the stoppage of building operations, and the Committee considered they could be better dealt with by the Provident and Relief Society. With this object a sum of £206 9s. 10d. was contributed to that Fund. The Committee of that Society distributed coal once a week, and soup and bread twice, and, when necessary, three times a week during the winter.

In many cases, owing to sickness; members of Friendly, Burial, and Insurance Societies were unable to keep up their contributions, and, but for this Fund, would have been compelled to sacrifice their previous payments. The amount paid under this head was £40 2s.

The long and serious illness in many families entailed upon them heavy expenses for medical attendance, and the Committee, after due enquiry, assisted a large number by paying a portion of the accounts, ranging from 30 to 50 % according to the circumstances of particular cases, at a cost of £497 5s. 3d.

On the 11th July, the Committee of the Provident Relief and Society placed at the disposal of this Committee their Relief Kitchen in Grafton Road, for the distribution of necessaries to the sick. The Kitchen was open daily for 24 weeks, and entailed an expenditure of £1,128 7s. 5d.

The Committee, as far as possible, avoided relieving other than in kind, but money to the amount of £175 19s. 4d. was expended in assisting domestic servants and others, who (although having contracted illness in the town) were with their relatives in the country. The funds in each case were administered by some responsible person acting on behalf of the Committee.

The Committee, after being first satisfied no undue funeral expenses had been incurred and that the applicants were in need, assisted many to bear the cost of burial of deceased relatives, but in no case to more than 50 %; the amount thus expended being £38 10s.

As patients became convalescent it was of the utmost importance that for the purpose of accelerating their recovery they should receive the benefits to be derived from a change of air, and with this object arrangements were made for their reception at various places in the country, many going to their own relatives, the Committee helping with travelling expenses and maintenance; 230 were thus assisted at a cost of £353 14s. 7d.

Two houses were taken for the purpose of Convalescent Homes, one at Goring and one at 95, Marine Parade, Worthing, and a qualified nurse was placed in charge of each. 54 patients were admitted at Goring, and 127 at 95, Marine Parade. The cost of the Goring Home was £67 15s., that of 95, Marine Parade £371 10s. 10d.

Convalescent Children were received at Horniman's Home at the nominal charge of 2s. 6d. per head per week inclusive, and 54 were admitted at a cost of £17 7s. 6d.

Poor Law Convalescent Homes were established for the reception of those who had been treated in Hospital as Poor Law patients. They were mainly supported by a separate private fund, and were assisted to the extent of £180 0s. 8d.

Many patients were maintained by a separate fund raised by a Committee at Broadwater, and £30 was given them as a grant in aid.

Many patients were also treated at West Tarring, a separate fund being raised and administered by a local Committee; in aid thereof this Committee made a grant of £80.

The amount of £68 1s. 2d. was incurred at the Retreat Hospital for patients who, although not Poor Law patients, were not in a position to pay for maintenance and were assisted to the above extent.

It will also be seen that grants were made to the St. George's Poor Fund and the Worthing Needlework Society amounting together to the sum of £35.

The total amount received was £8,803 4s. 11d.

In addition to the sum of £8,803 4s. 11d. in money, many valuable gifts in kind were received, viz., Brandy, Port Wine, Whiskey, Valentine's Essence, Tea, &c., and also Toys for the Convalescent Children.

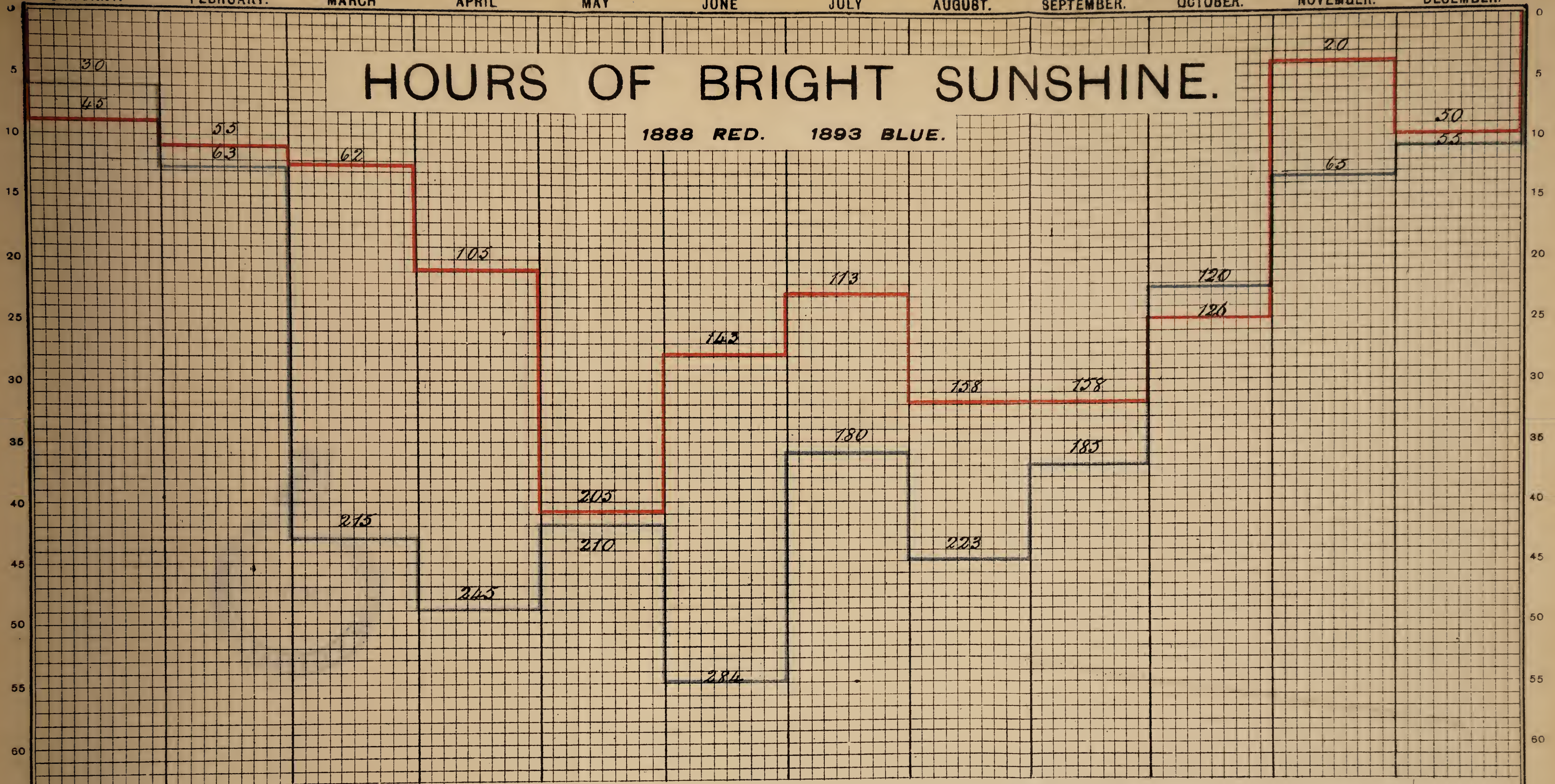
Many also made and forwarded articles of Bedding and Linen for the sick, and Clothing for the convalescents.

The total amount expended has been £7,812 0s. 6d., leaving a balance in hand of £991 4s. 5d., which sum the Committee purpose carrying forward to form the nucleus of a fund for the next winter.

JANUARY. FEBRUARY. MARCH APRIL MAY JUNE JULY AUGUST. SEPTEMBER. OCTOBER. NOVEMBER. DECEMBER.

HOURS OF BRIGHT SUNSHINE.

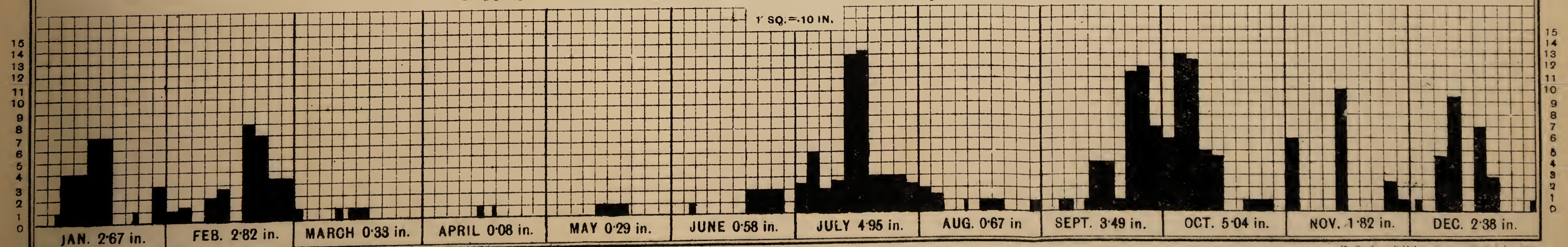
1888 RED. 1893 BLUE.



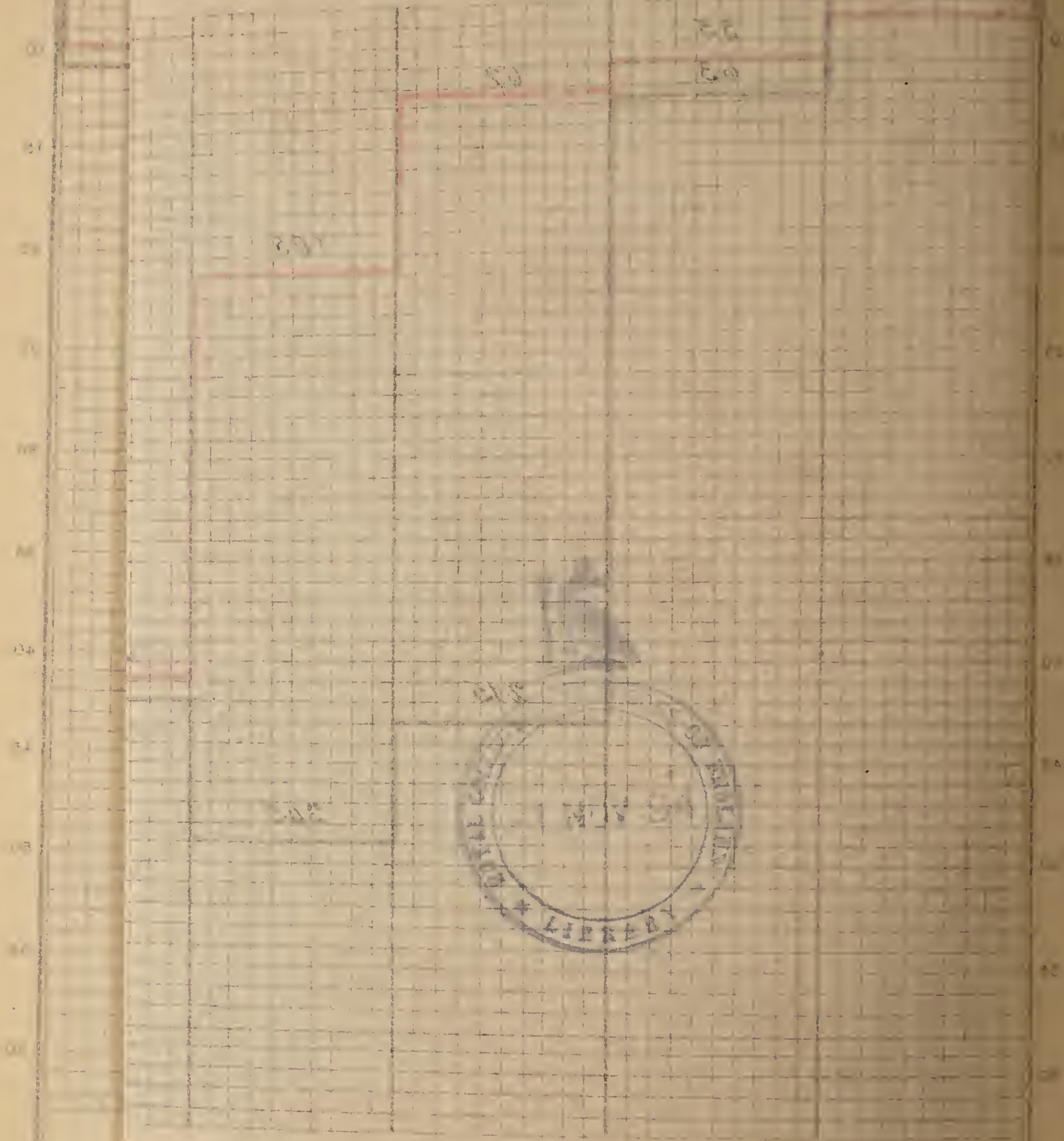
1888 - 1240 hrs.

1893 - 1875 hrs.

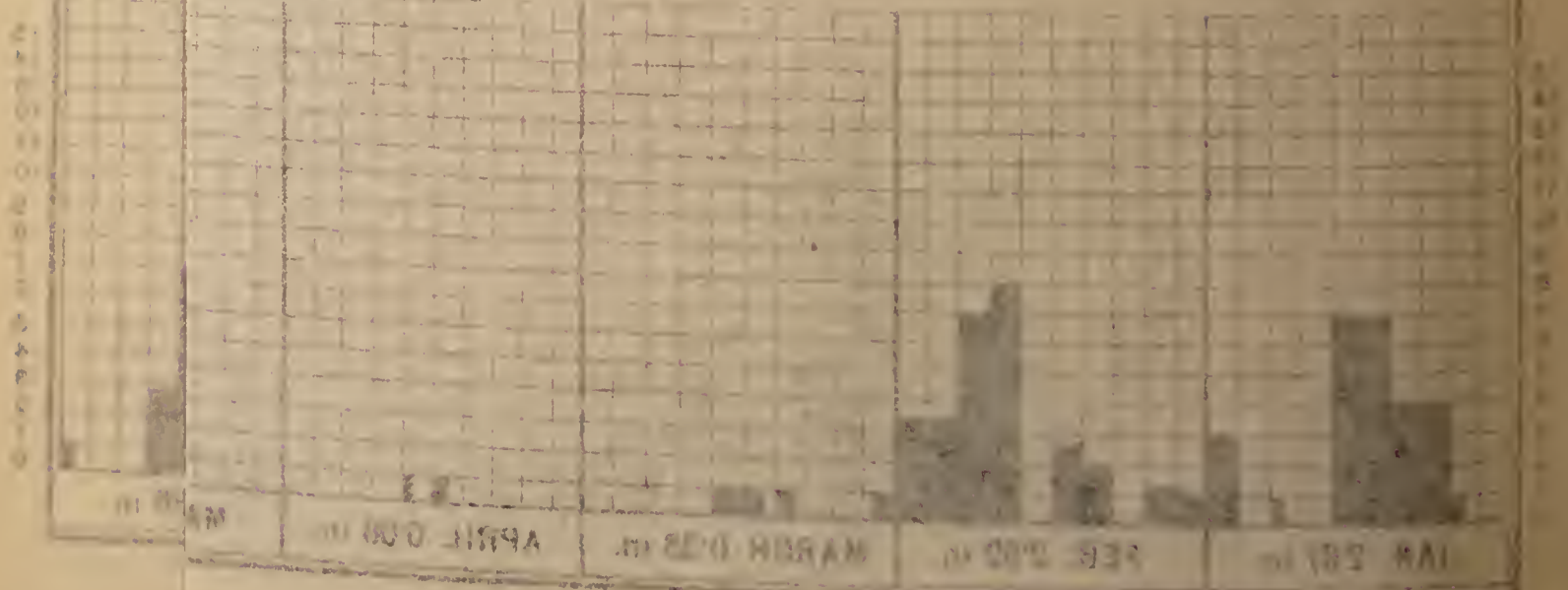
RAINFALL = 25.12 in., 1893.



HOURS



RAIN



FIRST QUARTER.

SECOND QUARTER.

THIRD QUARTER.

FOURTH QUARTER.

ACCUMULATED HEAT.

1888 RED.

1893 BLUE.

EACH SQ. = 1 DAY DEGREE.

